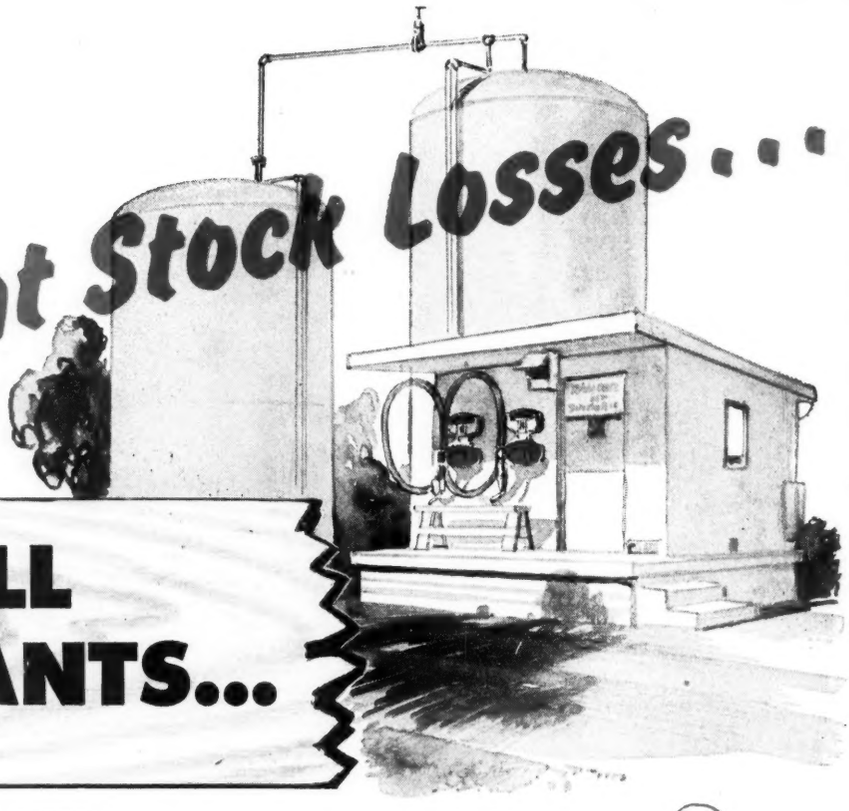
MIT ENGINEERING LIBRARY

OCTOBER
1945

OCT 2 7 1945

fueloil & oil heat

To Prevent Stock Losses . . .



SMALL BULK PLANTS...

Need Meters rather than locks

Need Daily Records rather than keys

Regardless of whether a bulk plant is large or small and whether it has an attendant on duty or not—errors and stock losses will repeatedly occur unless they are checked and corrected as they take place—or at the end of each day, instead of weekly or monthly. To eliminate costly inventory problems and stock losses requires more than just a lock—as locks merely prevent unauthorized withdrawal. By installing Brodie Meters and a simplified form-record of gallonage withdrawals, you secure, not only an accurate system of stock control, but the benefit of an impartial auditor, plus a permanent attendant in your plant twenty-four hours a day, month-in and month-out.

BRODIE METERS

PETROLEUM METERING EXCLUSIVELY

SINCE 1927

For full details, write today for Bulletin No. 200-A.

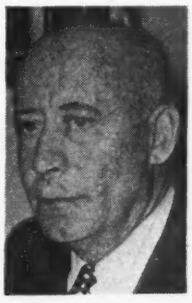
RALPH N. BRODIE CO., INC., 953 61st Street, Oakland 8, California

DIVISION OFFICES: Chrysler Building, NEW YORK CITY ★ 59 E. Van Buren, CHICAGO ★ 302 So. Pearl, DALLAS, TEXAS ★ 164 Jackson, SEATTLE, WASHINGTON ★ 2101 S. San Pedro, LOS ANGELES, CALIFORNIA

Names in the News

J. W. *Connolly* has been appointed head of the newly formed Marketing Council Department of Standard Oil Co., (N. J.) and vice-chairman of the Marketing Council, central sales group of the Jersey companies. The new department, in addition to assisting the Marketing Council in its work and advising the board, will make marketing studies and recommendations designed to stimulate better coordination among the marketing organizations of the numerous Jersey companies.

Leroy D. Kiley has been appointed general manager of the Friez Instrument Div. of Bendix Aviation Corp., according to Ernest R. Breech, president. Kiley has been associated with Bendix for four years as head of the new devices section and as executive assistant to Charles Marcus, vice-president in charge of engineering.



E. E. Frederick has been made national service manager for Williams Oil-O-Matic. Manager of the plants standby facilities for ordnance since October 1944, he now assumes charge of all field service. In addition he will head the handling of parts, repairs, factory rebuilds and claims. A veteran of World Wars I and II, he is a major in the Army Reserve.

J. E. Rowland has been elected president of Elliott-Lewis Co., Inc., Philadelphia Delco distributor. In the years just prior to the war this company was the

VOL. 4 NO. 6

fueloil & oil heat

OCTOBER

1945

C O N T E N T S

SUBJECT	PAGE	AUTHOR
Consumers Talk about Fuels—Part III	33	ROBERT GRAY
You'll Need Trained Men	36	S. KONZO
Atomic Heat No Threat	40	
Constant Level Valves	41	FRANK J. COONAN
The Fueloil Delivery Truck	44	J. F. WINCHESTER
Avoid Thermostat Trouble	47	J. W. SCHULZ

NEWS		DEPARTMENTS
OPA Considers Fueloil Ceilings	58	
	5	Names in the News
Dir. 59 Change Frees Control	54	
	10	Oilheating Trends
Building Restrictions Off	76	
	66	Industry Groups
International Heating Show Deferred	82	
	62	Manufacturers' Activities
Plan to Close "Inch" Pipelines	82	

COPYRIGHT 1945, HEATING PUBLISHERS, INC. ALL RIGHTS RESERVED. NO PART MAY BE REPRINTED IN ANY FORM WITHOUT WRITTEN PERMISSION.

VOLUME 4, NUMBER 6 OF FUELOIL & OIL HEAT. PUBLISHED MONTHLY BY HEATING PUBLISHERS, INC., 232 MADISON AVE., NEW YORK, (16), N. Y., BY CONTRACT WITH FOWLER-BECKER PUBLISHING COMPANY. OWNER OF FUELOIL JOURNAL (VOL. XXIV, NO. 4), AND HEATING JOURNALS, INC., OWNER OF AIRCONDITIONING & OIL HEAT (VOL. XVIII, NO. 10), OCT., '45.

HEATING PUBLISHERS, INC., 232 Madison Ave., New York, 16
LEOD D. BECKER, *Chairman, Board of Directors*

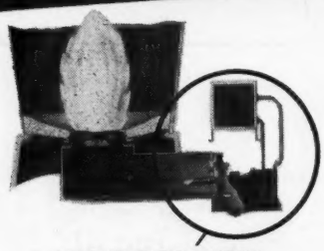
A. E. COBURN, *Editor* — ROBERT GRAY, *Business Manager* — A. G. WINKLER, *Advertising Manager*

Pacific Coast Representative: Don Harway
816 West 5th St., Los Angeles 13, Cal. Phone: Mutual 8512
1105 Russ Bldg., San Francisco, Cal. Phone: Yukon 1069

MEMBER CCA

Yearly: $3
Canadian: $4.35
single copy: this issue 35¢

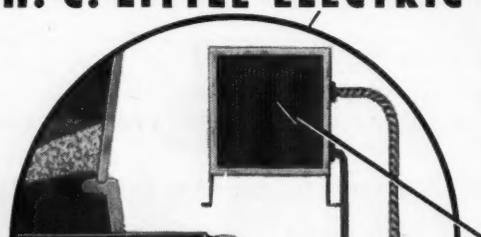
HERE'S THE 2nd REASON WHY.... You Can Make More Money as an H. C. Little Dealer



PATENTED

H. C. LITTLE ELECTRIC IGNITION

is an exclusive feature which will help you sell.



(This is Advertisement #2 in a Series of Eight)

THESE ARE THE OTHER REASONS

- —Exclusive Burner Design
- —40% Quicker Burner Installation
- —Absence of Service
- —Complete Range of Burner Sizes
- —No Noise, Roar or Pulsation
- —Complete Line of Factory assembled Units
- —Designed for the BIG Market of Small Homes

WRITE FOR A COPY OF "How to Get Real Profits in Post war Heating" and learn ALL the reasons why you can make more money as an H. C. Little dealer.

The H. C. Little vaporizing oil burner with patented ELECTRIC IGNITION enables owners of smaller homes to enjoy ALL the comfort, convenience, cleanliness and economy of automatic oil heat—with equipment designed especially for their needs, at a price they can afford. No other complete line of vaporizing equipment has truly automatic operation with electric ignition and thermostatic furnace control.

NO HI-LOW FIRE—NO PILOT LIGHT

H. C. Little Electric Ignition is simple, reliable, safe and economical. The oil is ignited on contact with a heat-resisting nickel-chromium wire coil. The location of this coil in the comparatively cool front end of the burner assures years of reliable, trouble-free operation. There is no hi-low fire, no pilot light. The burner either operates or is shut down completely—providing truly automatic operation comparable to the most expensive mechanized oil burning equipment.

This is PATENTED H. C. LITTLE ELECTRIC IGNITION, an exclusive feature of the patented H. C. Little Oil Burner... one of eight important competitive advantages which enable H. C. Little dealers to build a big sales volume, at a profit.

H. C. LITTLE OIL BURNER

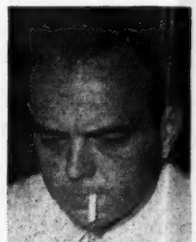
H. C. Little BURNER CO.

Dept. 10
San Rafael, California
Direct Factory Representatives in Principal Cities

The Greatest Name in Low-Cost Automatic Oil Heat for Small Homes

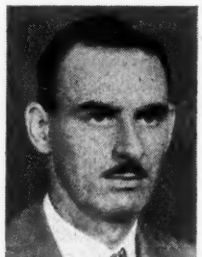
country's largest oilburner dealership, having sold upward of 4,000 burners in peak years. *T. H. Lewis,* former president, is now chairman of the board. Vice presidents elected were *R. W. Loomis, J. Call* and *J. C. Campbell. A. M. Morton* is treasurer and *O. L. Draeger* secretary.

C. F. O'Malley and *Dean H. Robinson* are recent additions to the home office staff of Timken-Silent Automatic Div. of Timken-Detroit Axle Co. Robinson takes over sales promotion and training work and O'Malley becomes assistant general service manager. O'Malley has been with Timken or one of its dealers since 1928, most recently with Booma-Breed, Inc., Lynn, Mass. Before coming to Timken, Robinson was director of public relations for Stinson Aircraft and Consolidated Vultee Aircraft Corp.



Robinson

William C. Archer and *Joseph R. Ziminski* have each been elected vice-president of Sid Harvey, Inc., Valley Stream, N. Y. Archer, who started with the company in 1934 when it had only four employees, is in charge of purchasing. Ziminski, formerly assistant sales manager, now takes the place of *Walter L. Bernard,* who goes to Philadelphia as president of Sid Harvey of Pa., Inc.



Archer

Ziminski

Lt. Col. John H. Hassinger, chief of the Construction Machinery Div., WPB, has been awarded the Legion of Merit for his services with the Corps of Engineers. Hassinger is co-owner of Hasko Utilities Co., New York, jobbers of oil-heating accessories and supplies. He was commissioned a major in the engineers in 1942, promoted to his present rank in 1943 and has subsequently been loaned to WPB.

This is it!
The New Postwar
LAU BLOWER
New!
OFF-SET IN SCROLL SIDES
reinforces the inlet of the venturi for greater strength.
New!
BEARING BRACKET
3-point suspension method. Brackets positively attached to shroud. Less interference with airflow. Same bracket used for various angles of discharge.
New!
BEARING ASSEMBLY
Long life, frictionless, self-aligning bearing. Completely encased in Neoprene.
New!
Positive Alignment of WHEEL TO VENTURI
1-piece, 3-point bearing suspension maintains concentricity of wheel to housing inlet. Insures maximum performance — least power consumption.
New!
HOUSING BASE
of heavy gauge cold reduced steel. Simple. Attractive. Rigid. Does not interfere with air pulling into the inlet. Also braced crosswise.
New!
1-PIECE MOTOR MOUNTING
Applicable to any angle discharge. Easily convertible from rear to top mounting.
New!
REDESIGNED SCROLL
of heavy gauge cold reduced steel. Scientifically dimensioned for perfect match with vastly improved wheel.
New!
DISCHARGE OUTLET DESIGN
and construction. The cut-off cannot set crooked on outlet. No wavy edges. Greater rigidity. Faster installations.
New!
CENTER SUSPENSION-TYPE WHEEL
Designed for low and high speed. Severely tested to prove its ample strength many times beyond ordinary requirements.

Patents Applied For

NEW LAU "A" SERIES BLOWER ASSEMBLY — THE MOST ADVANCED UNIT EVER OFFERED ON THE MARKET

• Now you can have the last word in product development—result of years of research and design evolution — the new, vastly improved LAU "A" SERIES BLOWER ASSEMBLY. It is the all-time, outstanding achievement in the blower field. Many features are revolutionary —exclusive with Lau—and *protected*. Laboratory- and wind tunnel-tested for performance and long life. Entire unit is die formed — no hand made parts whatsoever — lending itself to mass production on precision-built equipment with reflected low costs. Overall size considerably smaller than formerly. Will fit more jobs — outstrip all competition. Offered in complete range of sizes. Write or wire for description, dimensions, performance data, prices.

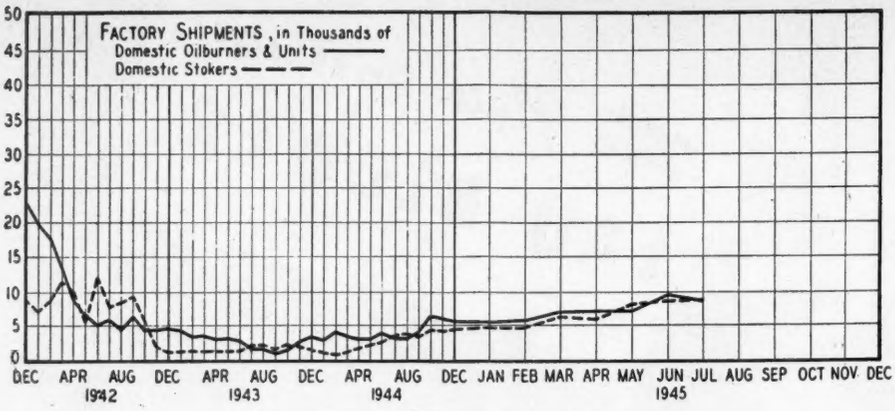
THE **LAU** BLOWER COMPANY

DAYTON 7, OHIO, U. S. A.

WORLD'S LARGEST MANUFACTURER OF FURNACE BLOWERS

Engineers and fabricators of general Air Handling Equipment • Single Inlet and Double Inlet Blowers • Propeller Fans • Accessories

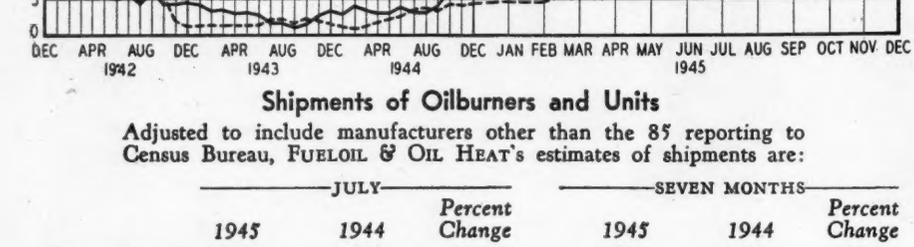
fuel oil & oil heat



Shipments of Oilburners and Units

Adjusted to include manufacturers other than the 85 reporting to Census Bureau, FUELOIL & OIL HEAT's estimates of shipments are:

	JULY			SEVEN MONTHS		
	1945	1944	Percent Change	1945	1944	Percent Change
Conversion	7,250	2,008	+260.2	40,280	18,220	+121.1
Boiler units	473	573	— 17.5	4,893	2,831	+ 73.0
Furnace units	823	256	+221.5	5,471	2,091	+113.9
All domestic	8,546	2,837	+201.7	50,644	23,142	+118.8
Commercial	2,542	2,202	+ 15.4	21,747	18,626	+ 16.8
Total	11,088	5,039	+120.0	72,391	41,768	+ 73.5



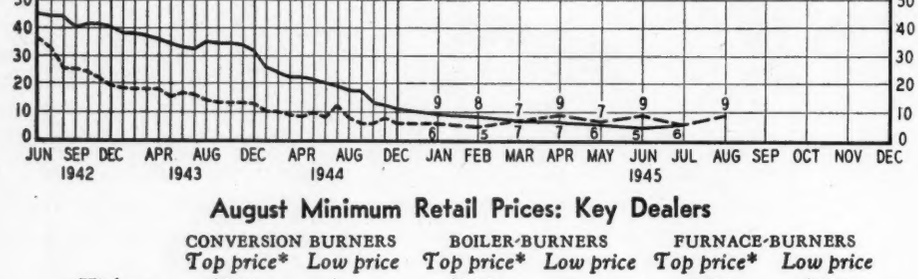
August Minimum Retail Prices: Key Dealers

	CONVERSION BURNERS		BOILER-BURNERS		FURNACE-BURNERS	
	Top price*	Low price	Top price*	Low price	Top price*	Low price
Highest	$350	$...	$800	$...	$515	$385
Lowest	200	...	425	...	405	340
Aug. Aver.	271	...	549	...	480	356
July Aver.	270	178	535	...	484	...

*Top price key dealers for conversion burners are those whose minimum retail prices are $200 or more, for boiler-burner and furnace-burner units (exclusive of ductwork) those whose minimums are $400 or over.

Price Index: Conversion Burners: January 1940 is 100%

WHOLESALE				RETAIL			
August	113.9	Six months ago	115.2	August	115.9	Six months ago	112.8
July	111.8	Year ago	114.0	July	114.7	Year ago	113.0



Oilheating Trends

INSTALLATIONS OF DOMESTIC oilburners and units in August are estimated at 7,930, compared with 2,991 in August last year. However, retail sales of burners and units in August were approximately 37,600 or more than four times the number installed. This is the first time that it has been necessary to differentiate between installations and sales, for there has previously been too little difference. The new situation, with sales considerably exceeding installations, will continue for some months . . . perhaps a year, and so an attempt will be made, month by month, to separate the figures.

Total domestic installations for the first eight months of the year were 43,639, against 24,714 in 1944, a rise of 76.7%. August sales of reporting dealers were divided: conversion burners 83%; boiler-burner units 14% and furnace-burner units 3%.

BURNER STOCKS: Based on the stock position of reporting dealers, the total number of domestic burners and units in dealer stocks August 31, country-wide, is estimated at 9,400, considerably up from 5,600 the previous month, reflecting increased movement from factory to dealer to consumer. The figure does not indicate any piling up of stocks, since dealer stocks before the war averaged around 40,000 and will hardly again reach that level for two or three years. Factory stocks at the end of July, the latest available data, were 5,574 domestic burners and units.

SERVICE INCOME: The average reporting dealer had August service department income of $3,201, up 64% from the $1,978 reported by the identical dealers the year previous. July service income had averaged $2,292. Much of the August upswing was caused by reconversions to oil after all restrictions were lifted.

RETAIL SALES OUTLOOK: Nearly all dealers realize that through 1946 the industry will encounter a flush demand for burners that will be hard to fill, with the result that a minimum of sales promotion is to be expected at the retail level. Dealers were asked this month their present estimates of their own burner sales in 1946, assuming relatively little sales promotion and also assuming that the burners are to be had. Based upon the forecasts of those reporting, with due allowance for size, past sales, number of ser-

vice customers, etc., total industry sales of about 315,000 are indicated for the year. This looks like a small total, until it is recognized that these dealers are not thinking of new home business, too nebulous to forecast. In 1941, installations were only 252,000 if new home sales are excluded, so these dealers are thinking in terms of 1946 sales being about 25% above 1941. FUELOIL & OIL HEAT's forecast of 1946 sales, published in October 1944, shows 358,000 exclusive of new home installations, and 420,000 including them.

Predicting the type of domestic installation, the dealers expect 70% of 1946 business to be in conversion burners, 18% in boiler-burner units and 12% in furnace units. A larger ratio of furnace units will be sold, without question, but new homes will get most of them.

Asked how many additional salesmen they expect to add to present staffs to handle 1946 business, the answer is one new man to each 135 expected sales, or 2,315 new salesmen, country-wide. Notice that this does not say that they expect each new man to sell 135 jobs, but that one man will be added to present staffs at that ratio. For example, a dealer expecting to sell 270 jobs next year already has one or two salesmen—he expects to add two.

Reconversions to oil this fall are expected by reporting dealers to bring the total number reconverted up to 83% of all those who converted to coal. This is a factor in the manpower problems of service departments. Interestingly, the expected reconversion percentage was the same in the East and the Midwest.

The big question facing dealers is when factory shipments will start in sufficient volume to meet their minimum needs. Of all those reporting, 23% think the day of minimum satisfactory burner receipts will be after the New Year . . . some forecasting as late a date as March and April. Earlier dates mentioned and the percent of dealers who expect fairly good shipments by then are: September 15, 4%; October 15, 11%; November 1, 9%; November 15, 19%; December 1, 22%; December 15, 12%. Thus, the largest group expects to get under way with a fair volume of burners between November 15 and December 1.

FUELOIL VOLUME: Considering the end of rationing, reconversions and new burner installations, Eastern fueloil distributors expect their gallonage during the season ahead to average 23% above last season; those in the Midwest and Northwest expect an average 17% rise. The difference between the two estimates is understandable; the East had the deepest ration cuts and has the strongest pent-up demand for new installations. It is obvious that those reporting do not expect individual consumption to go back very near to 1941-42 levels. There has been a lot of insulation and other heat-savers sold, and also people are not expected to turn thermostats all the way back.

A critical situation will develop in some areas over difficulty in getting additional fuel trucks. So few were replaced during the war, even though many had to be junked, that remaining trucks were pretty well overworked taking care of the restricted gallonage. Judging from dealer reports, those firms who simply cannot handle the increased demand from present customers with present trucks will have to get 1,650 new trucks before cold weather. This has nothing to do with convenience factors nor replacements due to wear, but simply covers those operators who can't handle any more gallons with present equipment.

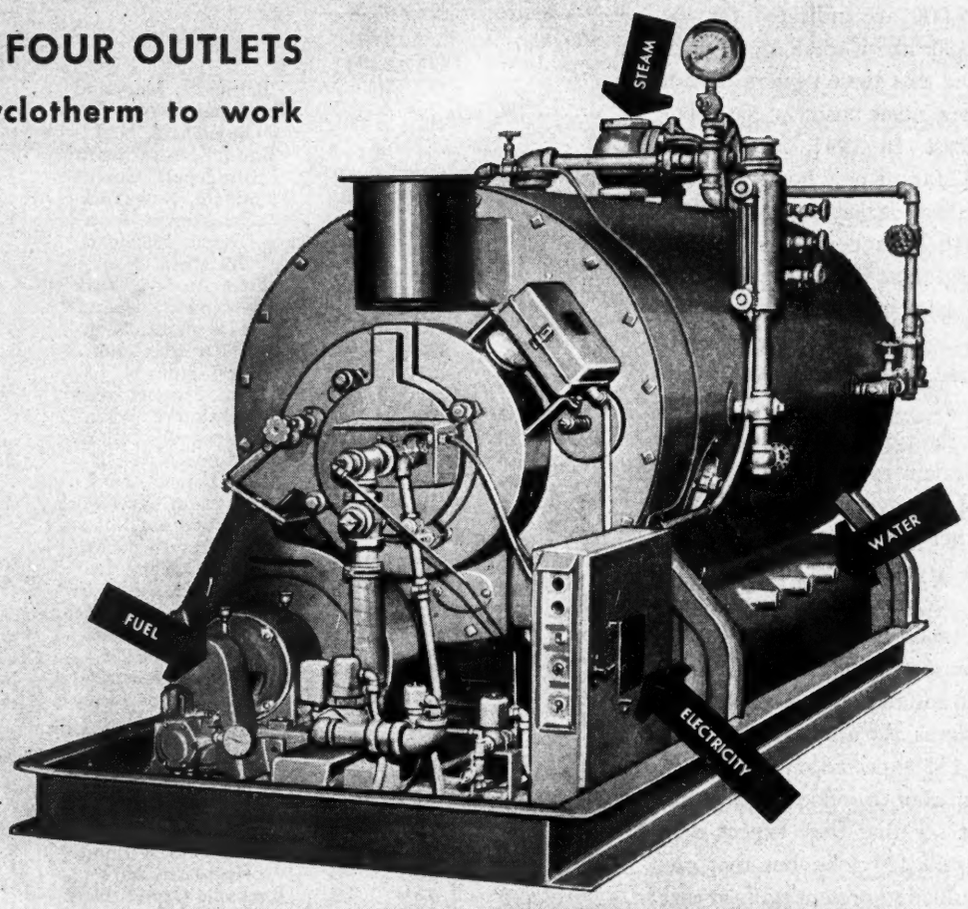
Oilburner* and Building Permits

OILBURNERS					DWELLINGS			
August		8 MONTHS			August		8 MONTHS	
1945	1944	1945	1944		1945	1944	1945	1944
..	..	..	..	Baltimore, Maryland	14	0	58	..
..	..	..	..	Binghamton, New York	7	0	20	1
..	..	..	..	Bloomfield, N. J.	4	0	..	..
32	36	..	..	Boston, Massachusetts	..	..	..	..
25	13	129	69	Bridgeport, Conn.	..	..	..	..
..	..	..	..	Buffalo, New York	5	..	..	..
..	..	..	..	Des Moines, Iowa	7	3	28	11
..	..	..	..	Detroit, Michigan	328	..	..	..
4	2	31	10	Elizabeth, N. J.	0	0	..	..
12	5	41	36	Freeport, New York	..	..	..	..
..	..	..	..	Greenwich, Conn.	7	0	13	1
..	..	..	..	Hackensack, N. J.	1	0	61	0
65	6	222	45	Hartford, Conn.	..	..	..	..
7	0	27	1	Irvington, N. J.	0	0	2	4
..	..	..	..	Lynn, Massachusetts	0	0	..	0
8	2	..	20	Milwaukee, Wisc.	129	98	..	120
29	14	122	107	Minneapolis, Minn.	74	0	394	3
6	2	24	18	Montclair, N. J.	..	..	..	..
..	..	..	..	Morristown, N. J.	0	0	..	0
16	6	..	63	Mt. Vernon, New York	..	..	..	..
16	5	182	89	New Bedford, Mass.	..	..	..	..
15	4	39	9	New Haven, Conn.	..	..	..	..
0	0	0	2	New Orleans, La.	..	..	..	..
3	2	74	..	New Rochelle, N. Y.	0	0	0	1
76	28	..	148	Manhattan, Bronx, Rchd	..	..	..	..
8	2	..	14	Norfolk, Virginia	10	0	..	6
0	0	2	1	Oakland, Calif.	..	..	..	..
14	18	73	93	Omaha, Nebraska	44	41	197	317
6	0	15	0	Orange, New Jersey	0	0	0	0
28	3	71	15	Paterson, N. J.	0	0	..	2
..	..	..	..	Plainfield, N. J.	9	0	14	7
23	2	68	14	Portland, Maine	1	0	..	2
99	31	356	111	Portland, Oregon	37	20	293	403
17	..	71	..	Providence, R. I.	2	1	330	1
..	..	..	..	Reading, Penna.	0	0	10	0
2	0	7	0	Richmond, Virginia	50	2	416	191
0	0	8	0	Rochester, N. Y.	..	..	..	..
7	3	33	22	Rockville Center, N. Y.	0	0	0	0
7	4	21	4	Salem, Massachusetts	0	0	0	0
15	2	71	39	St. Louis, Missouri	0	0	0	0
22	6	94	47	St. Paul, Minnesota	42	0	..	1
2	1	..	12	Schenectady, N. Y.	..	..	..	..
..	..	..	..	Seattle, Washington	132	132	972	869
..	..	..	..	Springfield, Mass.	40	0	106	11
7	1	39	..	Stamford, Conn.	..	..	..	..
..	..	..	..	Syracuse, New York	9	0	84	21
..	..	..	..	Utica, New York	2	28	5	30
7	6	142	93	Washington, D. C.	..	..	..	..
19	8	62	35	White Plains, N. Y.	0	0	1	0
11	0	29	12	Wilmington, Delaware	0	2	0	10
17	13	133	98	Worcester, Mass.	..	..	..	..
7	7	..	55	Yonkers, New York	..	..	..	..
615	232	2002	1132	*Totals*	621	327	2946	1881
+164.6		+76.8		*Percent Change*	+89.9		+56.7	

*Permits are not total sales in each market since none are reported from suburban areas, which normally account for 20% to 60% of total sales in each market; nor are they an accurate index where enforcement is lax. Rightly used, however, they are a useful working index.

CONNECT FOUR OUTLETS

Now put Cyclotherm to work



60 HP Combination Burner for Gas-Oil Cyclotherm Unit

CYCLOTHERM STEAM GENERATOR

Order your post-war Cyclotherm now

Cyclotherm Steam Generators are available to industry on a peacetime basis, *without priority for immediate delivery.*

With fuel restrictions lifted, you will want to modernize your power plant with a Cyclotherm Steam Generator.

Whatever your use of steam, the immediate answer is a completely assembled, packaged Cyclotherm unit.

Cyclotherm is emerging from the war with a veteran's reputation for delivering results under all kinds of service conditions.

Thousands of Cyclotherm units have been in service throughout the world with the Army, Navy and Marine Corps.

Cyclotherm's record of service is your best guarantee of its builders' engineering "know-how" and the quality built into a Cyclotherm unit.

Cyclotherm units range from 10 HP to 200 HP. They are completely self-contained, automatic, oil or gas fired. They are designed on unique principles of combustion that give top efficiency and service while holding operating and maintenance costs to a minimum. This packaged steam generator will give you years of continuous, trouble-free, economical service.

Orders are being filled promptly.

CYCLOTHERM CORPORATION · Box 110 · 90 Broad Street, New York 4, N. Y.

Consumers Talk About Fuels

Part III: Why They Like or Dislike Particular Fuels; Conclusion

By
Robert Gray

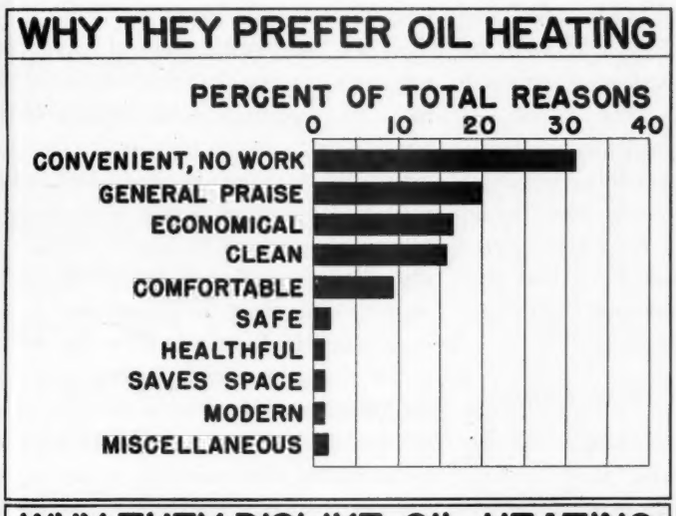
This is the third and final article in a series describing what reporters for FUEL-OIL & OIL HEAT *learned by talking with 1,438 families in 20 selected cities. The previous installments appeared in the August and September issues. This section deals principally with reasons given for liking or disliking various fuels.*

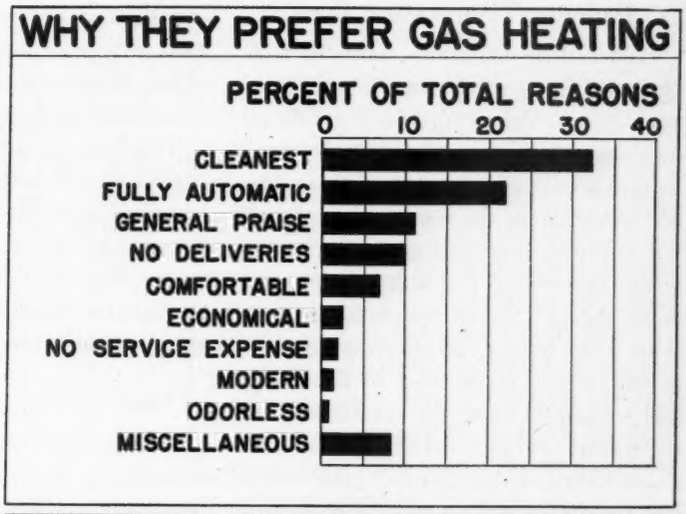
IN CONDUCTING THE INTERVIEW, the reporter, after learning which fuel the householder hoped to use in future, or would plan to use if getting a new heating plant or new home, went after reasons. Not only were reasons asked on why the choice of the preferred fuel, but, equally significant, the reasons for not wanting the other two fuels.

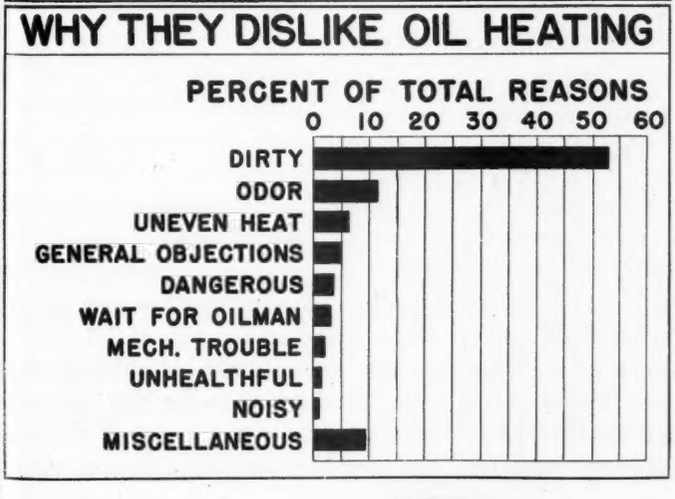
While the reasons covered a wide range, the ones most frequently mentioned are grouped into ten or less main heads in the accompanying charts and each shown as a percent of total favorable and unfavorable comments. Two types of listings need explanation. "General Praise" or "General Objections" refer to those comments that were not specific, such as "ideal," "delightful," "the best investment we ever made," or "wouldn't touch the stuff," "my friends say it's terrible," "very unsatisfactory," etc. The "Miscellaneous" listing, on the other hand, denotes specific reasons, often good ones, but mentioned less than one percent of the time, and thus unimportant from a promotional or sales viewpoint.

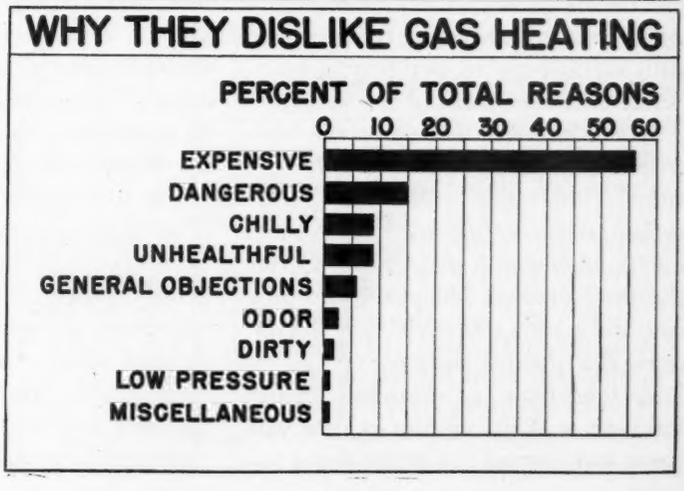
In studying the charts, it is noteworthy that comfort (in fifth place with both oil and gas) is much less of a factor than convenience, cleanliness and fuel cost. The reason called "Modern Living," with variations of the phrase, was mentioned quite a number of times in favoring either oil or gas. Ambiguous as it sounds, it apparently reflects a general feeling of adequacy, or "keeping up with the Joneses."

The big surprise with oilheating was the principal objection that people express, the opinion that it is dirty. In most cases the full statement said that oilheat-









ing leaves a greasy film on curtains and draperies, and some said on furniture and woodwork. The American public is delightful with adjectives, even on so questionable an impression. As variations for dirty, they called it greasy, gummy, grimy, filmy, messy, oily, sticky, smoky, smudgy and scummy. No one called it slimy.

So strong a public objection to oilheating has been well concealed from general industry circles—it's a subject almost never mentioned. It can't be blamed on old jalopy installations, for the folks who want to quit oil and go to gas have burners averaging 7.4 years old, compared with the over-all average burner age of 7.5 years.

Aside from careless installations, which are relatively infrequent in late years, there are two significant ways in which oilheating could be dirty, and both result from striving to get the maximum fuel economy in operation. Long operating cycles . . . long burner on and off periods . . . do save some fuel while allowing a temperature variation in the home of perhaps three or four degrees.

Radiator Temperature Peak

Under such conditions, radiator temperatures alternate between cold and sizzling hot. At their hottest condition they increase air movement in the room to such an extent that loose dirt particles are moved from the floor and deposited on curtains and draperies, especially where radiators are installed under windows. Again, extreme temperature variations, cold to hot, causing considerable expansion and contraction of the metal, will sometimes break the cement seal between cast iron sections of warm air furnaces, letting some unburned gases escape into the air ducts. In a leaky furnace this would happen when the burner starts, with a plus pressure in the firing space, before the stack is warmed.

A third reason, and some say more frequent, would be that a perfectly tight furnace, operating with long burner cycles, can throw unburned gases or soot out through the draft regulator during the starting period, with plus firebox pressure and a stone cold stack. How this dirt could get from the basement up into the house is not clear, but apparently through leaky ducts. This can also happen with gas to some extent . . . notice that a few gas objections were because it's dirty.

All of these conditions have been heard of, but not considered widespread. Clearly, users as a whole would spend a little more for oil to have cleaner homes. Short burner cycling, with more even radiator and furnace temperatures, also stack temperatures, would apparently keep the home cleaner.

Among those who want to switch from oil to gas, 75% have boiler heating and 25% warm air, while all oilheating users in the study showed 66% boiler heating and 34% warm air. On the face of it this would indicate that boiler heating is the more troublesome of the two under long cycling operation, but the number of cases involved in this particular consideration was not large enough to get away from accidental effects. It can, however, be concluded that the "dirty" accusation applies to both types.

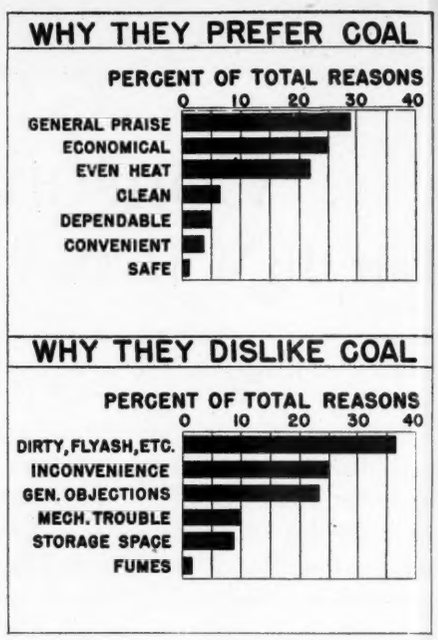
An interesting sidelight on reactions to fuels in various type heating plants is found in those homes that have winter airconditioning plants. Of those using coal, 80% want to switch fuels, with oil 11% and with gas 5%. While this degree of dissatisfaction is lower than encountered in the overall study, averaging with airconditioning 20% who want to switch, the reason, regardless of fuel used was that the system was dirty.

This was usually explained as dirty streaks on the walls, possibly caused by excessive humidity in cold weather, or dirt picked up by the forced air movement. The significant point is that any faults in heating systems were almost universally blamed on the fuel used.

Impressions, Not Facts, Count

On the whole, it is obvious to oilheating industry men that the "dirty" impression about oil is greatly overdrawn, but since so many have that opinion, steps should be taken to dispel it. Nothing could damn a facility so thoroughly with women as the circulated gossip that it makes the davenport scummy.

The industry has not recognized that oilheating has an odor, to the extent the public believes. Assuming the house is closed up, with no windows open, the odor has to get upstairs inside the house. A leaky furnace could cause it; it also could occur when the burner starts against a cold stack and some unburned gases get out through the draft regulator.



Shorter burner cycling should also improve these conditions. Uneven heat is unnecessary, with close thermostat settings, but long cycling has apparently resulted in that complaint. It is important to notice that no one objected to oilheating because of fuel cost.

Among those who want gas, the strongest reason is that they feel it's the cleanest heat. Fourth in the list is "no deliveries." This was described in several ways, but in general it seems that ladies don't like to have oil companies make appointments for deliveries, nor do they like to have to watch the oil gauge on the tanks. Under wartime conditions barely half of customers were served by degree-day delivery methods and only about one-sixth, country-wide, have fill signals that make it unnecessary for the lady to stay home to let the driver into the basement. A combination of the two is the only way to equal gas' fuel supply convenience. An oil company not operating as automatically as possible is helping the gas industry's story.

The impression that gas is dangerous was the objection in 15% of answers, compared to 4% objecting to oil for that reason. They mean that it might explode, as differentiated from danger to health, which is classified under "unhealthful." When they say gas is chilly, they are thinking of evenings spent in a friend's home where gas was burned and the thermostat set low to hold down fuel bills. The big objection to gas, that it's expensive, is common to all parts of the country. The percent making this objection in

the Midwest was only slightly lower than in the East.

In the group preferring coal, the strongest reason, "general praise," refers principally to habit. People often said that their families had used it for generations, it had always been satisfactory and they had no inclination to change.

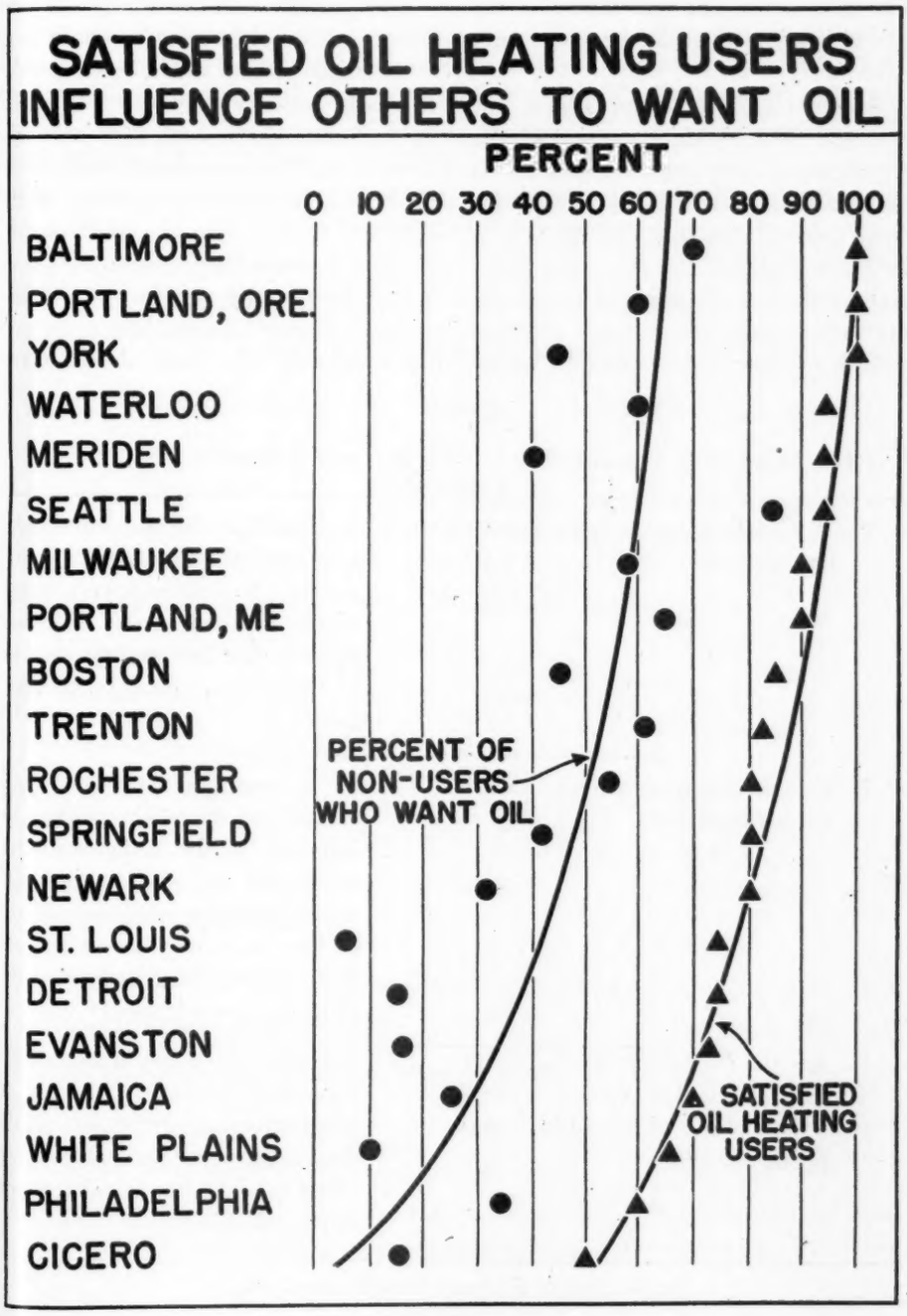
Other reasons, such as "even heat," "dependable" and "safe" reflect the coal industry's promotional campaigns. It would have been possible to separate the coal reasons into handfired and stoker fired; this was not done because the earlier sections of this study have shown that coal offers so little competition.

It has often been said that success begets success, but sometimes interesting to see it demonstrated on a chart. Satisfaction with oilheating, as represented by the number of present users who want to keep it, ranges from 100% in Baltimore, York and Portland, Ore., down to 50% in Cicero. There is a definite relation between the percent of satisfied oilheating users in a city and the percent of non-users who want to install oilheating. These percentages jump around a bit, but when plotted on a chart and frequency curves drawn they are seen to be almost parallel. Table X shows the figures as plotted on the chart. The clear conclusion is that one of the best ways to get people wanting oilheating is to fully satisfy those who now have it. Friend to friend advertising obviously works.

TABLE X

Satisfied Users Influence Others

	Percent of Oilheating Users Who Prefer Oil	*Percent of Other Fuel Users Who Want Oil*
Baltimore	100	69
Portland, Ore	100	60
York	100	47
Waterloo	93	61
Meriden	93	42
Seattle	92	84
Milwaukee	90	58
Portland, Me.	89	66
Boston	87	43
Trenton	83	61
Rochester	81	54
Springfield	81	42
Newark	81	32
St. Louis	77	6
Detroit	76	14
Evanston	74	17
Jamaica	71	23
White Plains	68	10
Philadelphia	60	33
Cicero	50	17



In conclusion, this survey highlights the fact that the oilheating industry can no longer consider coal its principal competition. Coal is all but buried, in public preference. Before the war our sales arguments were principally designed to show the convenience and cleanliness of oil as contrasted to the hard work and dirt associated with coal. But that is no longer our story.

Coal users are already convinced that they want to get away from it, but will they go to oil or gas?

Years ago, getting away from ashes and shoveling was a delight; today people object to watching the gauge on an oil tank. After oilheating had popularized the idea of automatic heating, gas selling campaigns offered what looked like further refinements. Oilheating now has the tools to match gas in convenience and cleanliness and to a considerable degree is using them. But many of our potential prospects don't know it.

This is the final installment in the series of articles reporting on the consumer interview survey. A 12-page reprint booklet is available, containing the complete report.

Salesmen, advertising and public relations men should have copies to study and for permanent reference use. Order enough for each of your men who can benefit from the study. Price, 25c each, postpaid. Checks or stamps with order, please.

You'll Need Trained Men

But Modern Simplified Codes Make Figuring Warm Air Easy

By

S. Konzo*

Warm air heating installation, long a matter of individual "art" among dealers and installers, has been reduced to very near an exact science by research carried on the last twenty years at the University of Illinois. Prof. Konzo, who has been responsible for much of this work, begins here a series of three articles explaining how the new installation code works. In the next two articles he will calculate and design a gravity and a forced air heating system, using the simplified system.

LET US ASSUME that you are connected with a small heating firm that sells oilburners and furnaces. During the war you have been able to struggle along with a skeleton crew, and there has been no need for a salesman in this seller's market. The day is coming soon, however, when long delayed building will resume, when equipment will become available, and when you will have to plan to actually sell again to a buyer's market. What sort of staff are you planning? What qualifications are you seeking? How are you going to train these new men in the short time that will be available?

(1) You will probably need salesmen, one or more depending upon the size of your business.

(2) You should have somebody in your organization that can take the salesman's survey of requirements and translate them into an actual plant showing sizes of equipment and a complete layout of the heating system.

(3) You are going to need competent installers of mechanical equipment.

Your most difficult job will probably be to train salesmen and office layout men. The large number of men who have been trained to do sheet metal work for the army can probably be converted to installers of equipment without too many difficulties.

It would be ideal if you could take the time to have daily classes to teach your salesmen. You probably will have to do some of that in any case. But are you equipped to teach the men how to make a comfort survey of a building? Can you tell them just what sort of information you will need from each prospect? Can you show them how to figure heat losses? The chances are that you could do a fair job, if you had the time, but you won't have time.

And that is where our story begins. The National Warm Air Heating and Air Conditioning Association recognized over two years ago that the day was coming when practical textbooks would have to be made available for new men. They realized that an oilburner, or an oilburning furnace, was just so many pieces of equipment until it was integrally assembled into the house. Good equipment has been available, but good installation has not always been obtainable. A good burner that was poorly installed and poorly adjusted was the best sort of advertising for competitive fuels. As a result of the work of this Textbook Committee of the Association, the job was assigned to Guy Voorhees of Indianapolis and myself to prepare a comprehensive series of short textbooks that were practical in approach.

The problem that we faced was primarily one of attempting to establish a set of standards that would be acceptable to a large majority of industry. We recognized that many shops have sold oilburners, gas furnaces, stokers, and hand-fired equipment, and that many shops have had to deal with two or three different companies. Each company felt that it had the only answer to the problem of how to figure sizes and how to lay out the equipment. The much abused warm

***WHAT* information is wanted?**	***WHY* is it wanted?**
4. A. If it's a new house, has construction started?	4. A. If it's still in the blueprint stage, you have more leeway in plant design. Sometimes a very slight change in some detail of house construction will enable you to give the owner a much better heating plant.
B. If construction has started how far has it progressed?	B. If construction has not progressed too far, slight changes in framing can be easily made at practically no cost to facilitate duct installation and permit better register locations. The owner gets more efficient heat and plant installation cost is reduced.
C. Are the plans made by (a) architect, (b) builder or (c) owner? What is his name, address and phone number?	C. This tells who to get in touch with regarding details of framing or other structural items not clearly shown on plans and which may affect (a) heat loss calculations or (b) plant installation layout.

Fig. A. *Sample Excerpts from Textbook No. 1*

*Special Research Professor of Mechanical Engineering, Engineering Experiment Station, University of Illinois.

air dealer was faced with the impossible situation of having to learn two or three different methods of figuring heat losses and sizes, of having to keep in mind several sets of stock sizes of ducts, fittings, and registers, and of having to learn the whims and the prejudices of each furnace company which supplied equipment. Our immediate job was not merely to set up some new method of doing business, but called for a critical survey of every existing method, and finally to set up procedures that would be acceptable to the entire industry.

The job took over two years at a cost running over $12,000. During that time we have called industry clinic meetings at which such groups as blower manufacturers, control manufacturers, filter manufacturers, register men, fittings producers, and furnace manufacturers were separately invited to discuss their particular problems of standardization and simplification. All in all over 150 of the leading men in industry were consulted.

Table 3

TYPICAL EXAMPLE OF HEAT LOSS CALCULATIONS

Heat Loss and Construction Data (See Tables 2a and 2b, Pages 4 to 9)

					N.W. Bed		S.W. Bed		Living		Kitchen		Dining		Bath & Hall	
1	Room Use															
2	Room No. | Story				1 | 1st STORY		2 | / STORY		3 | / STORY		4 | / STORY		5 | / STORY		6 | / STORY	
3	Running Ft. Exposed Wall				20 FEET		23.5 FEET		26.5 FEET		16 FEET		22.5 FEET		5 FEET	
4	Ceiling Height				8 FEET		8 FEET		8 FEET		8 FEET		8 FEET		8 FEET	
	Type of Exposure		TABLE 2 No.	TABLE 2 Factor	Area or Crack	B.t.u. Loss	Area or Crack	B.t.u. Loss	Area or Crack	B.t.u. Loss	Area or Crack	B.t.u. Loss	Area or Crack	B.t.u. Loss	Area or Crack	B.t.u. Loss
5	Gross Wall	a.	–	–	160	---	188	---	212	---	128	---	180	---	40	---
		b.				---		---		---		---		---		---
		c.				---		---		---		---		---		---
6	Windows and Doors	a.	1a	90	24	2160	24	2160	36	3240	8	720	21	1890	9	810
		b.	2a	90	–	–	–	–	21	1890	21	1890	–	–	–	–
		c.														
7	Net Exposed Walls	a.	3g	15	136	2040	164	2460	155	2325	99	1485	159	2385	31	465
		b.														
		c.														
8	Cold Partition	a.	18a	14	–	–	48	672	56	784	–	–	–	–	–	–
		b.														
9	Cold Ceilings	a.	19h	8	108	864	121	968	171	1368	186	1488	63	504	53	424
		b.														
10	Cold Floors	a.	25a	12	–	–	–	–	–	–	–	–	63	756	–	–
		b.														
11	Infiltration	a.	28b	34	17	578	17	578	17	578	–	–	17	578	15	510
		b.	32c	160	–	–	–	–	20	3200	20	3200	–	–	–	–
12	Sub-total Room B.t.u. Loss				5642		6838		13385		8783		6113		2209	
13	20% Reserve for bath, sun, basement rooms, etc.				–		–		–		–		–		442	
14	TOTAL ROOM B.T.U. LOSS				5642		6838		13385		8783		6113		2651	
15	The sum of all the ROOM B.T.U. LOSSES is the TOTAL BUILDING B.T.U. LOSS – 43,412 B.t.u. per hr. (Tran															

Fig. E. *Sample heat loss data sheet—a standard form.*

6 WINDOW DATA

Show sizes and locations on plans.

a. **Fit of Windows: Tight ( ) Average ( ) Loose ( )**

b. **Type: Double hung ( ) Casement ( )**
Wood sash ( ) Steel sash ( )

If casement, provide sketches showing over-all sizes and hinged opening dimensions.

c. **Are Storm Sash used? All ( ) Part ( ) None ( )**

If Part, indicate by s. w. on plans.

d. **Are Storm Doors used? All ( ) Part ( ) None ( )**

If Part, indicate by s. d. on plans.

e. **Weatherstripping**
Windows: Yes ( ) No ( ) Good fit ( ) Poor fit ( )
Doors: Yes ( ) No ( ) Good fit ( ) Poor fit ( )

7 CHIMNEY DATA

a. **Over-all height, from furnace floor level.....ft.**

b. **Does it extend to basement?..... Yes ( ) No ( )**

c. **Does it extend above highest point of roof?..... Yes ( ) No ( )**

d. **Is it offset?..... Yes ( ) No ( )**

e. **Does it have a lining?..... Yes ( ) No ( )**

f. **Inside dimensions....." × ....." Show location on plan**

Fig. B. *Sample portion of information blank.*

We want to emphasize, therefore, that the textbooks that have finally been produced are not the personal whims of Konzo and Voorhees, but are industry manuals that have the best thoughts and ideas of every major factor in the warm air heating industry in the United States and Canada.

At this time we have ready for distribution the following textbooks and standard form sheets, which can be obtained from the National Warm Air Heating and Air Conditioning Association, at 145 Public Square, Cleveland 14, Ohio:

(a) Textbook Section No. 1—"How to Make a Comfort Survey, and How to Make Floor Plans." 50 cents.

(b) Textbook Section No. 2—"How to Check Frame House Construction." 50 cents.

(c) Information Blank — standard form including check list and sheets for drawing floor plans. 15 cents.

(d) Textbook Section No. 3—"How to Figure Heat Losses." 50 cents.

(e) Heat Loss Data Sheet—standard form—5 cents.

(f) Textbook Section No. 5—"Gravity Code and Manual for the Design and Installation of Gravity Warm Air Heating Systems." 50 cents.

(g) Textbook Section No. 7—"Code and Manual for the Design and Installa-

tion of Warm Air, Winter Air Conditioning Systems." 50 cents.

(h) Textbook Section No. 8—"Yardstick for Classifying Warm Air, Winter Air Conditioning Systems." 50 cents.

Your salesmen will require some knowledge of oilburners and some knowledge of your specific product. That information he will probably get from factory literature and from a study of your demonstration models. He also needs the ability to visualize that burner or furnace in his customer's home. He must know what is expected of the unit and what his customer wants in the way of performance. In other words, he must be able to make a Comfort Survey, which will be complete enough so that the layout man in the office or at the main factory can interpret the requirements and provide a layout that will meet the needs. The man who lays out the job is not a mind reader. If the information is not provided on the comfort survey Information Blank or on the sketch of the floor plan, he is forced to guess or to ask you for more details.

Textbook 1 dealing with Comfort Surveys is, therefore, a prime requisite for the salesman. To a beginner, a house is just a house. To an experienced salesman, a house is a home having distinct characteristics and occupied by people of individual tastes. We show in Fig. A a sample page from the textbook showing the nature of the contents, in which we try to explain in brief statements why certain items are considered important.

The *Information Blank* provided by the Association is one of the most comprehensive and yet simple check sheets that have been devised. This form was evolved after a number of trials that were sent out to a large number of men in industry, and requires a minimum of write-in data. As shown in Fig. B, which shows a portion of this blank, we have adopted the check system wherever feasible.

Textbook 2 deals with information that is not commonly available, namely how to check frame house construction. Fig. C shows several illustrations from this book which clearly indicate what the salesmen can look for in making a survey of a house. We do not expect our heating men to become master carpenters. We do, however, want them to recognize some of the common construction features in a house so that they can intelligently work with and advise the builder and architect.

Textbook 3 gives in great detail a recommended method of figuring heat losses. We have devised a simple method by which the heat loss from a wall, for example, can be obtained by multiplying the wall area in square feet by a Heat Loss Factor. This procedure eliminates some of the difficulties experienced in the usual lengthier method. The advantages may be stated as follows:

(1) Only one multiplication is involved.

(2) All numbers used are whole numbers, rather than decimals.

(3) For any given temperature zone only the Heat Loss Factors shown in one column are of interest.

Fig. D shows a typical page from this book. All together, about 150 different constructions are listed in the complete tables.

Most beginners do not have a clear concept of what we mean by window dimensions or wall dimensions. None of the handbooks explain, for example, whether the ceiling height should be measured to the nearest ¼ inch, 1 inch, or ½ foot. We recommend in this text book that room dimensions be measured to the nearest ½ foot. We also show in a diagram that window dimensions should be measured to the nearest ¼ foot. It is not necessary to make hair-splitting measurements for the calculations of heat losses, since the basic data do not warrant such accuracy.

The *Heat Loss Data Sheet* which ties in with the entire textbook series has been carefully worked out for simplicity and for logical sequence of data.

Fig. E shows a sample work sheet, in which the heat losses of six rooms have

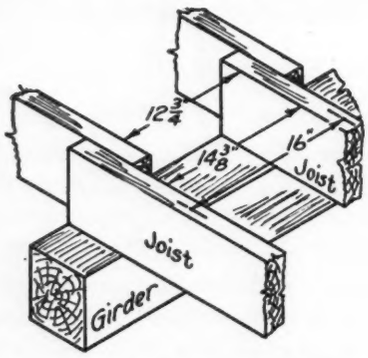


Fig. 9. Lapped Joists on Top of Girder.

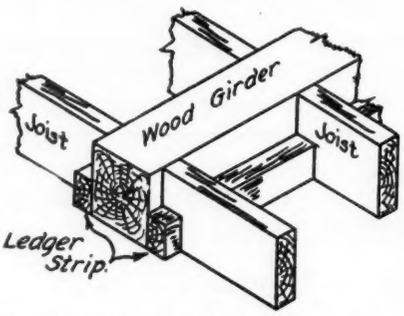


Fig. 12. Joists Butting into Wood Girder.

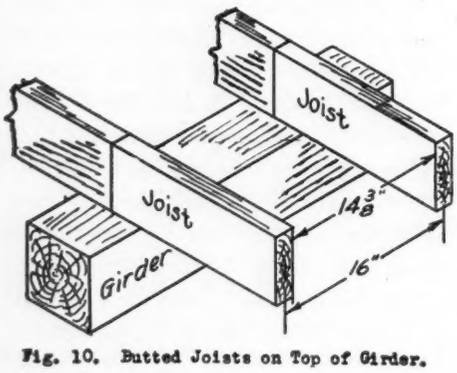


Fig. 10. Butted Joists on Top of Girder.

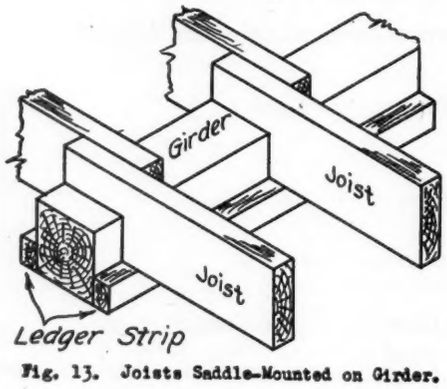


Fig. 13. Joists Saddle-Mounted on Girder.

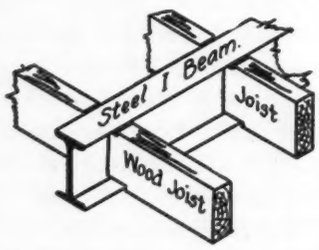


Fig. 11. Joists Butting into I-Beam Girder.

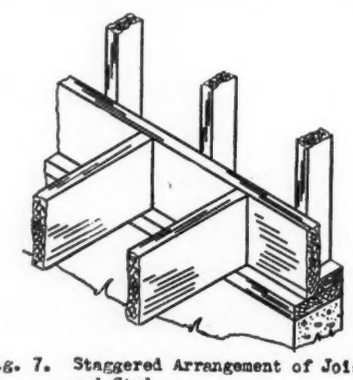


Fig. 7. Staggered Arrangement of Joist and Stud.

Fig. C. *Sample illustrations from Textbook No. 2.*

Section A

METHOD FOR DETERMINING B. t. u. HEAT LOSS FROM ROOM

The heat loss in B. t. u. per hour should be determined for each room to be heated.

FOR ANY GIVEN LOCALITY, USE ONLY THE HEAT LOSS FACTORS SHOWN IN THE COLUMN OF DESIGN TEMPERATURE DIFFERENCE FOR THAT LOCALITY. The varying temperature differences for walls below grade, interior partitions, basement floors, and floors over unheated spaces have all been provided for in the design temperature column which you select for the building.

Table 2a

HEAT LOSS FACTORS

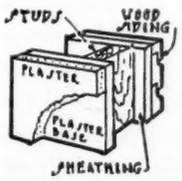
	DESCRIPTION	Heat Transmission Coefficient U	HEAT LOSS FACTOR (Multiply values shown by exposed areas in sq. ft.) Design Temperature Difference, deg. F. 40	50	60	65	70	75	80	85	90	100
Window	**WINDOWS** No. 1		(See Tables in Appendix A)									
	(a) Glass, single	1.13	45	57	68	73	79	85	90	96	102	113
	(b) Glass, double (storm sash)--tight fitting	0.45	18	23	27	29	32	34	36	38	41	45
	(c) Storm sash put up and taken down annually will probably be loose fitting. Under such conditions, recommend using	0.75	30	38	45	49	53	56	60	64	68	75
	DOORS No. 2											
	(a) Doors are figured the same as though they were windows (See No. 1)											
	EXPOSED WALLS No. 3 Frame											
	(a) Frame, wood siding, paper, sheathing, lath and plaster	0.25	10	13	15	16	18	19	20	21	23	25
	(b) Same as (3a) substituting ½" rigid insulation for lath	0.19	8	10	11	12	13	14	15	16	17	19
	(c) Same as (3a) with ½" flexible insulation between studs in contact with sheathing	0.17	7	9	10	11	12	13	14	14	15	17
	(d) Same as (3c) with two air spaces	0.15	6	8	9	10	11	11	12	13	14	15
 Frame	(e) Same as (3a) with 2" blanket or bat insulation between studs	0.12	5	6	7	8	8	9	10	10	11	12
	(f) Same as (3a) with 3⅝" mineral wool or equivalent between studs	0.09	4	5	5	6	6	7	7	8	8	9
	(g) Same as (3a) substituting $\frac{25}{32}$" rigid insulation for wood sheathing	0.19	8	10	11	12	13	14	15	16	17	19
	(h) Same as (3a) with composition siding over wood siding	0.21	8	11	13	14	15	16	17	18	19	21
	(i) Same as (3a) substituting asphalt or asbestos shingles for wood siding	0.30	12	15	18	20	21	23	24	26	27	30
	(j) Same as (3h) substituting ½" rigid insulation for lath	0.22	9	11	13	14	15	17	18	19	20	22
	(k) Same as (3h) with ½" flexible insulation between studs in contact with sheathing	0.19	8	10	11	12	13	14	15	16	17	19
	(l) Same as (3j) with two air spaces	0.17	7	9	10	11	12	13	14	14	15	17
	(m) Same as (3h) with 2" blanket or bat insulation between studs	0.12	5	6	7	8	8	9	10	10	11	12
	(n) Same as (3h) with 3⅝" mineral wool or equivalent between studs	0.09	4	5	5	6	6	7	7	8	8	9
Leaky Frame	No. 4 Leaky Frame											
	(a) Clapboards or wood siding, studs, lath and plaster	1.00	40	50	60	65	70	75	80	85	90	100
	(b) Same as (4a) with composition siding over wood siding	0.28	11	14	17	18	20	21	22	24	25	28
	(c) Corrugated sheet metal siding on studs	2.00	80	100	120	130	140	150	160	170	180	200

Fig. D. *Sample page showing precalculated tables for heat loss determinations.*

been figured. The complete data sheet includes spaces for twelve rooms. The advantages of this sheet, which was the result of numerous trial layouts, are as follows:

(1) Only essential data are included.

(2) The items are in logical sequence. For example, item 5 is obtained by multiplying items 3 and 4. Also, item 7 is obtained by subtracting item 6 from item 5.

(3) Construction data are referred to by the numbers shown in Fig. D. This eliminates wordy descriptions.

(4) The total room heat loss can be obtained by adding the numbers in the vertical columns.

W. D. Redrup of Huntington, Indiana, has demonstrated that it is possible to train an intelligent high school girl to make these simple calculations. In many offices, the data which the salesman brings back to the office could be turned over to a girl who is trained for this simple job.

The information contained in these elementary textbooks is fundamental for any heating man, regardless of whether he is selling equipment or installing them. Many executives frequently take the position that a salesman should not know too much about technical details. That may be true as far as the intricacies of combustion, fuel oil specifications, and theories of flame propagation are concerned. However, a dumb salesman who cannot appreciate the home owner's viewpoint will certainly not be a credit to the company or the industry. The salesman must remember that the prospect is interested in his own house and that he expects the salesman to know how the oil burner would satisfy the needs of that house. These textbooks attempt to do just that.

Atomic Heat More a Promise Than an Immediate Threat

EXPLOSION OF THE FIRST ATOMIC BOMB on Hiroshima August 6, 1945, did much more than destroy the city. Among other things it released a stream of imagination in the minds of feature writers unequalled in fanciful altitude. We have heard that automobiles in the next few years will be powered by a fist-size atomic engine containing its own lifetime charge of energy; that everybody will have abundant power and therefore the capacity to create wealth beyond the wildest present dreams; that living will be truly push-button, with all tasks performed by this great, free, new power. Competent scientists, always conservative, say that these flights of imagination are somewhat exaggerated.

It is significant that science has unlocked the secret of atomic energy for the first time, and has transformed that knowledge into three explosions, each of which wrecked the country-side for miles around. The first of these blasts on July 16 knocked down several observers six miles from the explosion, and fused the sand of the New Mexico desert into glass. It was the first time that man had released atomic energy, though he had spent years calculating the probability

But it is a very long step from the sudden and destructive release of energy to the fine and controlled release that will furnish power for industry, transportation and push-button living. It is the step from the discovery of iron to the completion of a modern automobile. Undoubtedly the step will be completed, but it probably will not seriously affect the lives of many in our present adult population. Learning to produce atomic energy under close control will take research, development and time.

The most probable utilization of nuclear energy, the basis of the atomic bomb, is as a source of heat, according to Harry A. Winne, General Electric vice-president in charge of engineering policy, and Dr. C. Guy Suits, vice-president and director of the G-E research laboratory. However, they warn large users of power to go ahead with plans for power plants using present day fuels "for years to come," and not to look for development of a new energy source in the near future.

To understand the possibilities — and the limitations—of atomic power it is necessary to understand the structure and nature of the atom. A complete and understandable report on the development of the atomic bomb is contained in a report by Professor H. D. Smyth of Princeton University at the request of Maj. Gen. L. R. Groves, who was in charge of the work for the Army. This "Smyth Report" was released by the Army August 12, 1945, and being semi-technical, it relates without emotion five years of prodigious work by the leading scientists of this country and England. This report points incidentally to possible means of utilization of atomic energy for the heating of water and perhaps the generation of steam for peaceful purposes.

Every element, material or substance is made up of atoms. These atoms are basically alike for all materials, consisting of a nucleus of protons and neutrons, around which electrons rotate like moons around a planet. The protons in the nucleus each have a positive electric charge, which is matched by an equal number of negatively charged electrons rotating around the nucleus. The only difference between elements such as hydrogen, oxygen, iron, gold or uranium is in the number of neutrons and protons in the nucleus and the number of electron "moons" (equal to the number of protons) which surround it. The greater the number of neutrons and protons in the nucleus, the heavier the material per unit of mass. The hydrogen atom consisting of one proton and one electron is the lightest of the elements, and uranium, consisting mostly of atoms containing 92 protons, 146 neutrons (plus 92 electrons) is the heaviest of the natural elements. The electrons have negligible weight, and do not materially enter into weight calculations, which are concerned only with the number of neutrons and protons in the nucleus.

Size of the Atom

If we could arrange atoms so that only the outer orbits of the electrons were touching, it would take half a million of them to equal the diameter of a human hair, but the nucleus of the atom, with which we are chiefly concerned in the release of energy, is a very small part of the total diameter of the atom. If the nucleus were enlarged to the size of a grapefruit, the electrons would be dots two-thirds of a mile away. The atom is mostly empty space, and its nucleus or

(*Continued on page* 107)

Constant Level Valves

Second Installment of a Series on Vaporizing Burner Operation

By
Frank J. Coonan*

BEFORE GOING ON TO THE ACTUAL servicing of vaporizing burners, a thorough understanding of the operating principles of a Constant Level Valve is necessary. Manufacturers claim that 75% of the valves returned to them as defective are not really defective but have been made so by service men. Such practices as twisting the heads off adjusting screws when they have reached the safety stop required by the Underwriters' Laboratories, Inc., bending float arms, and enlarging the slots in metering stems, have been all too common.

With understanding should come the realization that these practices are never warranted, they can never remedy conditions, but they can ruin the Constant Level Valve.

The purpose of a Constant Level Float Control Valve is to deliver a measured flow of oil to the burner, regardless of the quantity of the oil in the storage tank, and to shut off the oil flow, if the flame should go out, or if the oil level in the control becomes too high, because of leakage at the inlet valve. As can be seen in Figure (1), which is diagramatic and includes only basic essentials, oil flows from the tank, through the C.L.V. strainer chamber, through the inlet needle valve to the control body. As the oil rises in the control body, it in turn raises the float until it reaches the normal oil level of the Control, at which point the float will have exerted sufficient pressure on the inlet needle to shut off the flow into the control body.

Up to this point, every function so far described can be considered on the inlet side of the Control. Therefore, the flow of oil into a C.L.V. is determined by the inlet head pressure, which is equal to the pressure exerted by the head of oil in the storage tank, minus the friction encountered in the line filter, the oil line, the C.L.V. strainer and the inlet needle valve port. Wax accumulations, sludge, gum, etc., all offer additional resistance to the flow of oil. The normal oil level of a Constant Level Valve is plainly marked on the outside of the control housing. Anytime the oil level is below normal, check the oil supply, then make sure the filter, oil line, strainer, and inlet port are clean. If the oil level rises ¼" above normal, the safety trip mechanism will operate to shut off the oil supply. This is caused by leakage around the inlet needle valve and should never happen if the valve is clean.

The flow of oil from the outlet side of a C.L.V. is determined by the outlet head pressure, which is equal to the pressure exerted by the head of oil in the control body, minus the friction encountered in the metering stem, and the oil feed assembly.

To get the rated output from a C.L.V. with a normal oil level, the metering stem slot, the meter stem seat, and the entire oil feed assembly must be clean. The viscosity of the oil also affects the flow from the outlet side, because of the low fixed operating head of oil in the control body, and the fixed area of the slot in the metering stem, which is exposed above the face of the valve seat.

If a change from one grade of oil to another is made, the C.L.V. will have to be recalibrated.

*Modern Heat & Fuel Co., Philadelphia.

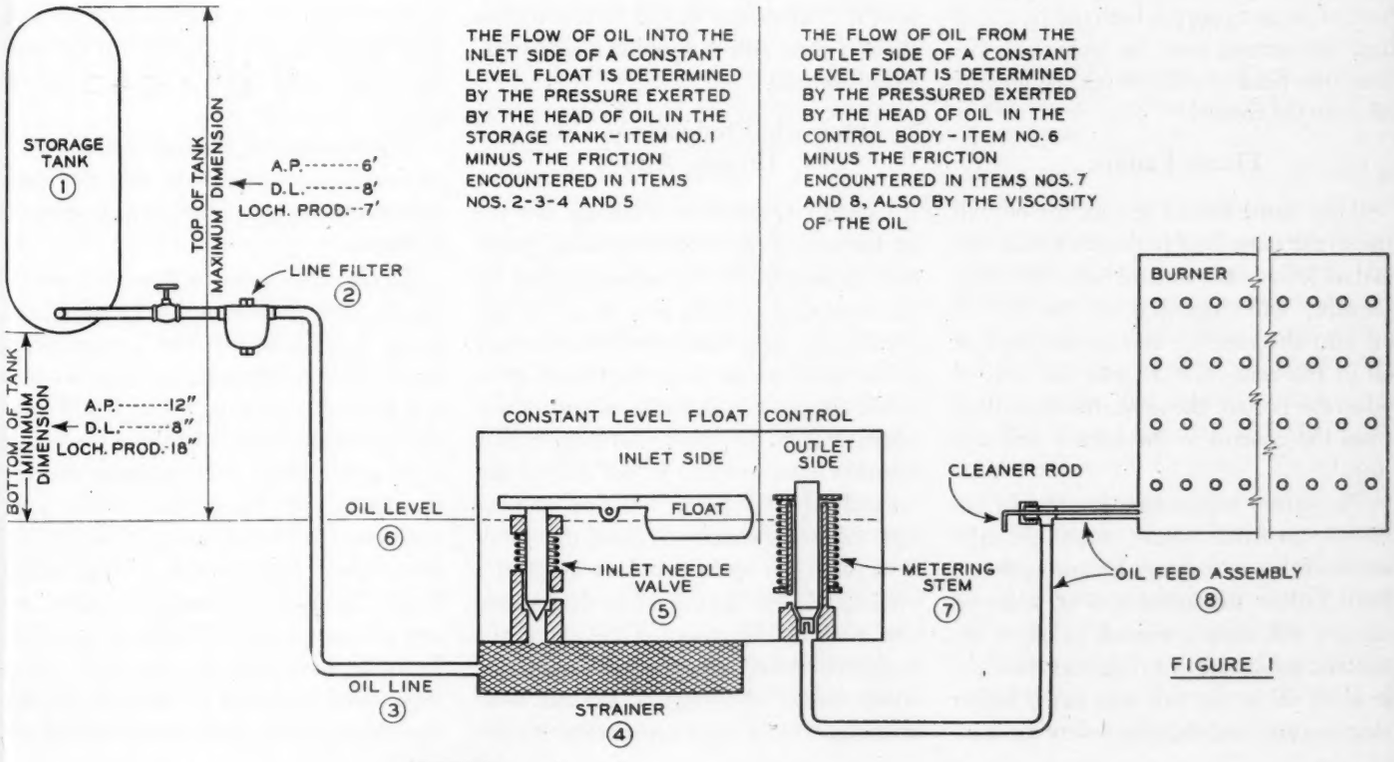

THE FLOW OF OIL INTO THE INLET SIDE OF A CONSTANT LEVEL FLOAT IS DETERMINED BY THE PRESSURE EXERTED BY THE HEAD OF OIL IN THE STORAGE TANK - ITEM NO. 1 MINUS THE FRICTION ENCOUNTERED IN ITEMS NOS. 2-3-4 AND 5
THE FLOW OF OIL FROM THE OUTLET SIDE OF A CONSTANT LEVEL FLOAT IS DETERMINED BY THE PRESSURED EXERTED BY THE HEAD OF OIL IN THE CONTROL BODY - ITEM NO. 6 MINUS THE FRICTION ENCOUNTERED IN ITEMS NOS. 7 AND 8, ALSO BY THE VISCOSITY OF THE OIL
STORAGE TANK ①
TOP OF TANK MAXIMUM DIMENSION
A.P.-------6'
D.L.-------8'
LOCH. PROD.--7'
LINE FILTER ②
BOTTOM OF TANK MINIMUM DIMENSION
A.P.-------12"
D.L.-------8"
LOCH. PROD.-18"
CONSTANT LEVEL FLOAT CONTROL
INLET SIDE
OUTLET SIDE
FLOAT
OIL LEVEL ⑥
INLET NEEDLE VALVE ⑤
METERING STEM ⑦
CLEANER ROD
BURNER
OIL FEED ASSEMBLY ⑧
OIL LINE ③
STRAINER ④

FIGURE 1

The oil level in a Detroit Lubricator Company C.L.V. is fixed, not adjustable.

The oil level in an Automatic Products Company C.L.V. is adjustable.

The normal oil level in an A.P. Control should be ¼" below the notched opening in the safety trip float chamber. If everything in back of the inlet valve is clean, yet the oil level in the control body is too low, it can be raised. If the inlet valve itself is clean, yet the oil level is too high, it can be lowered. About 1" from the reset lever end of the control is a small round hole. Inserting a very narrow screw-driver through this hole will enable you to engage the slotted top of the inlet needle valve. If the oil level is low, turn the needle counter-clockwise, or up, to raise the level of the oil in the control. If the oil level is high, turn the needle clockwise, or down, to lower the level of the oil in the control. Use extreme care in making this adjustment. Always wait a sufficient length of time for the float to adjust itself to the change.

The oil level of one model Lochinvar water heater C.L.V. is adjustable. On this particular control, the high fire adjustment is made by raising or lowering the head of oil in the control body. It can be identified by the hinge pin adjusting arm assembly, which is mounted on the outside of the control body. On all other Lochinvar Controls, the oil level is not adjustable.

When an adjustment is made to the head of oil in a control, both the pilot and high fire setting must be rechecked, because the head of oil governs the flow of oil from the control.

Flame Failure

If the flame should go out, the oil will rise to the same level in the pot as the normal oil level in the control body. The float assembly will then shut off the flow of oil into the control, and as the level of oil in the control body and the level of oil in the pot are the same, the flow of oil from the control to the burner will also stop.

The safety trip mechanism should not operate on flame failure, unless the inlet needle valve is leaking. Occasionally on flame failure the lower row of holes on the pot will show a seepage of oil on the outside, indicating it would seem that the level of oil in the pot was much higher than normal, and that the safety mechanism had failed to operate. Actually it is caused by the capillary action of the oil creeping up the carbon deposit on the inside of the pot, and leaking out through the air holes. It can happen even though the actual pool of oil in the bottom of the pot is not above the normal level in the control body.

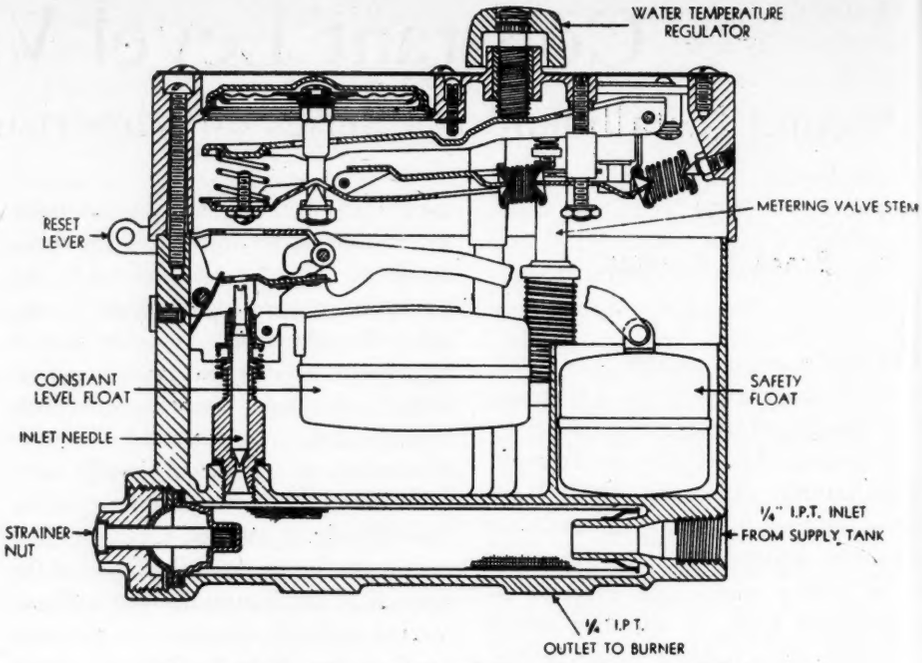


Figure 2. *Automatic Products Co. water heater control.*

The actual Constant Level Valve mechanism is exactly the same for both furnace and water-heater valves, the only difference being in the control top, or actuating mechanism. These controls are easily mastered, and any service man worthy of the name should be able to dismantle, clean and reassemble a control in a few minutes.

Automatic Products Co. C.L.V. (Figure #2)

Control Operation—Pressing the reset lever down puts the control in operation. A slight left and upward press on the lever shuts off the flow of oil. In operation, the large float which is connected to the inlet needle controls the oil level in the chamber. A partition separates this chamber from the smaller safety trip float chamber. An increase of ¼" above the normal oil level permits the oil to flow into the safety chamber, raising the safety float, which is connected by a latch to a weighted lever. As the safety float raises, the latch is disconnected, allowing the weighted lever to drop down upon the inlet needle, shutting off the oil flow. Pressing down the reset lever relatches the weighted arm in the raised position, and at the same time forces the small float downward, forcing the oil from the small chamber into the large chamber.

Dismantling—When the control top has been removed the metering stem can be lifted from the control. Taking out two float assembly mounting screws permits the removal of the entire float assembly, after which the inlet needle valve can be removed.

Adjustments—The flow rate adjusting screws are located under the nameplate. One furnace model, designed to give three stages of fire, has an intermediate or high pilot adjusting screw, located in the center of the pilot selector knob, which is part of the electric top.

When adjusting the high fire flow rate on furnace controls, make sure the manual control knob is turned to its maximum position.

To check the pilot oil flow on a water-heater control, when the water in the boiler is cold, remove the nameplate; a toggle lever is beneath the exposed opening. With a piece of stiff wire, bent on the end to form a right angle, lift the toggle lever until a slight click indicates that the operating arm has shifted to the pilot position. Then bend the upper part of the wire tightly over the side of the control body. This locks the control on pilot, and any necessary pilot adjustment can then be made. Removing the wire lock allows the control to change to the high fire position, so high fire adjustments can be made.

On some controls the wire locking is unnecessary as the water temperature selector knob has a pilot position which is marked on the nameplate.

Detroit Lubricator Co. C.L.V. (Figure #3)

Control Operation—The operation is practically the same as the Automatic Products Co. C.L.V. Raising the lower long reset lever puts the control in operation. To stop the oil flow, push down on the short, upper trip lever. The safety trip mechanism is actuated either by a secondary float, or by a single two-in-one float, which acts both as an operating and as a safety float member. Upon a ¼" rise of the oil above normal, the safety trip unlatches a spring-loaded lever, which exerts a heavy downward pressure on the inlet needle, shutting off the oil flow. Lifting up the reset lever relatches the safety trip mechanism in its normal operating position.

Dismantling—First remove the control top. On electric furnace controls the metering stem can then be lifted out. On manual furnace and water-heater controls it is necessary to remove the two screws from the stem guide casting before the metering stem can be removed. Then compress and take out the trip lever spring and lever. Hold down the float and press down and rotate the inlet needle ¼ turn and lift out; or, if the entire float assembly is to be removed, take out the float assembly mounting screw and lift out the entire assembly, which includes the inlet needle.

Adjustments—The flow rate adjusting screws are located under the nameplate of electric and water-heater controls. On manual controls they are located on or adjacent to the selector knob.

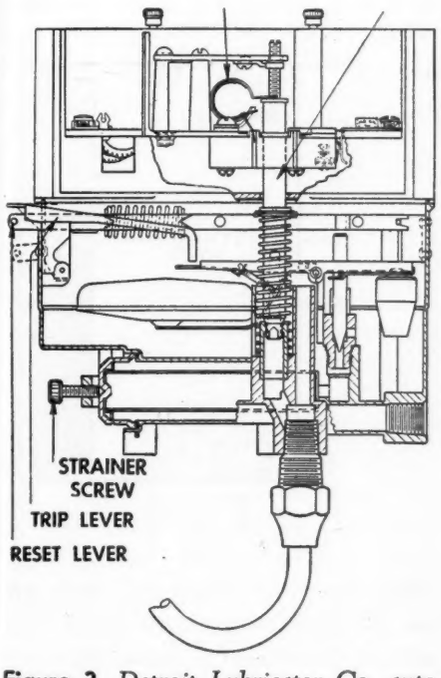


Figure 3. *Detroit Lubricator Co. automatic furnace control.*

To check the pilot oil flow on a water-heater control when the water in the boiler is cold, remove the nameplate and block the operating arm down in the pilot position with a wedge or a screw driver. Any necessary pilot adjustment can then be made. Removing the wedge allows the control to change to the high fire position, after which any necessary high fire adjustments can be made.

Do not attempt to make any adjustment to the mechanism in the control top of either an A.P. or a D.L. water-heater valve.

If the indications are that the thermostat or power element is defective: (1) check the thermo-bulb to see if it is tightly clamped against the side of the storage tank; (2) trip the operating mechanism manually to see if the metering stem is binding. Most complaints of overheated water are caused by the pilot adjustment being set too high. To test a water-heater thermostat, place the thermo-bulb in a pan of water which has been heated above 160 degrees. The operating arm should immediately snap to push the metering stem down to the pilot position. Remove the thermo-bulb from the hot water and place in a pan of cold water. The operating arm should immediately snap to allow the metering stem to move to the high fire position.

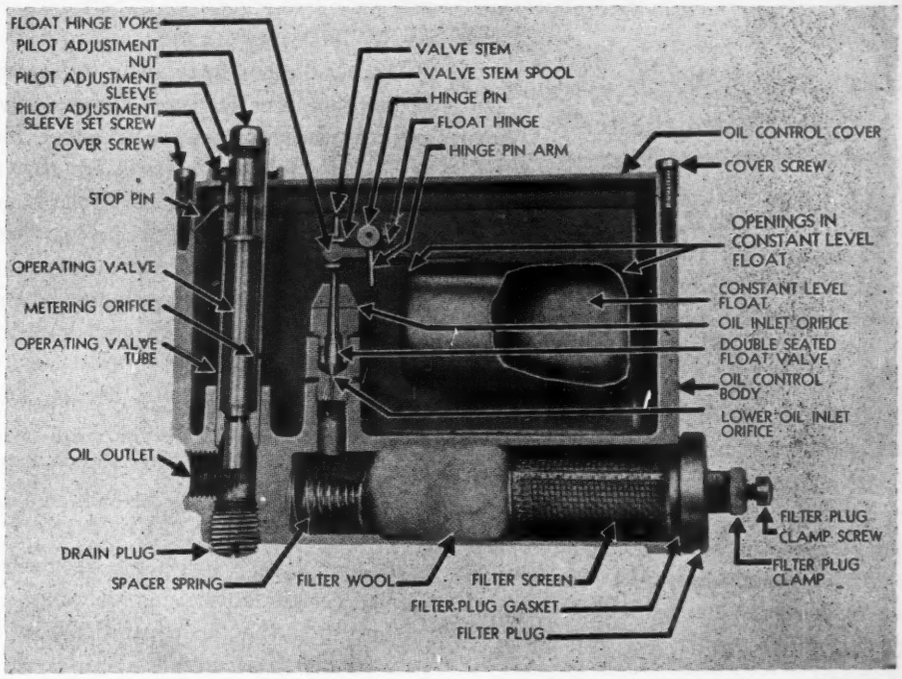


Figure 4. *Lochinvar Corp. water heater control (current model).*

There is no in-between for these thermostats: they are either good, or bad. If a thermostat is defective, or if any part of the operating mechanism is bent or broken, return the entire control to the factory for reconditioning.

Lochinvar Corporation Water Heater C.L.V. (Figure #4)

Control Operation — These controls differ radically from either the A.P. or the D.L. water-heater valves. The inlet needle valve is a double seated valve so arranged that when the float is in its upward position, the lower valve needle will be seated, shutting off the oil flow. Also, if the float moves too far downward, the upper valve needle will be seated, cutting off the oil flow. If there is no oil in the float chamber, the float will of course be in the down position, and the upper needle valve will be seated. To start the control in automatic operation it is necessary to raise the float by hand, just enough to start the oil flow into the control. When the float becomes buoyant, it will thereafter maintain a normal oil level.

If the lower inlet valve seat should become dirty, the oil level would build up

(*Continued on page 86*)

The Fueloil Delivery Truck

Engineering Progress in Truck Design, with Flexibility Featured

By
J. F. Winchester*

WE HAVE COVERED MANY FACTORS pertaining to the fueloil business; however, the entire operation is greatly influenced by the satisfaction obtained from the type of motor equipment selected.

When we consider the fact that in the majority of cases the fueloil season, as far as its peak is concerned, only lasts for a relatively short period of time, it is essential that motor equipment, suitable for the purpose and capable of steady operation without breakdown in extreme winter weather, be selected. This is a fundamental requirement if low costs are to be obtained.

The selection of the correct chassis and the proper size tank and specialized accessories is all important. The results you will obtain from the operator's wage or salary, reliability of service to the customer, running maintenance, overhaul costs, and ultimate depreciation, will depend upon the decision you make in its selection. If constant service and reliability are to be obtained, discriminate study of all factors surrounding the chassis and its accessories must be made. In addition, the size of the tank to be employed should be balanced to meet the actual volume your particular operation is called upon to deliver.

From my viewpoint, one of the most important considerations is chassis adaptability and service facilities available to care for it after normal wear has been encountered. These service facilities should be capable of caring for the many individual mechanical devices that go to make up the highly specialized vehicle employed by this branch of the industry. If an operator overlooks this important point, he will encounter a great deal of trouble after the installation is made.

*Fourth in a series by the author, who is Manager, General Automotive Division, Standard Oil Co. of New Jersey.

During the last forty years, enormous strides have been made in chassis design and to place before you some of the trends, the following charts are shown which indicate progress along given lines.

During the last ten to twelve years, remarkable strides have been made along structural lines which have improved the appearance of the vehicles and thus created advertising value.

During the war period, many improvements in mechanical devices have been made which will enhance the value of your equipment if they are adapted to your operation.

In connection with motor equipment having certain advertising value, some operators find fully streamlined, well painted and clean equipment has an outstanding advertising value; however, if you want this, a premium has to be paid for it and naturally this will affect your delivery cost per gallon. On the other hand, by purchasing a simple tank and using a plain painting scheme, low first cost is accomplished; but this type of equipment has very little customer appeal. I believe the extra cost involved for the better looking equipment worth while; however, I do feel that the extra cost should be charged to the advertising budget.

Some companies feel the old-time method of having a driver fill out the delivery ticket is satisfactory; while other concerns feel super service can be given through the employment of a ticket printing device which promotes the idea of a clean legible delivery ticket that is a definite sales asset. From my viewpoint, ticket printing devices are desirable as they are a check on volume delivered and an asset from a time saving standpoint.

In connection with the chassis employed, during the war we have heard considerable talk about the different types of units being produced for the Army, the most popular unit that has caught the fancy of the public has been the Jeep. The principal features that differ from conventional vehicles are its body design and four-wheel drive which enables it to negotiate all types of terrain. Four and six wheel drive units came to the forefront through the military having adapted them for their use. Such vehicles are capable of giving satisfaction on off-road conditions as well as on main highways. As far as the fueloil business is concerned, main highways are sometimes covered with snow and frequently traveling conditions similar to those encountered by the Army are found. In northern sections of the country some operators may well feel a 4-wheel drive unit or a 6 x 6 is the type they should employ. Chart No. 1 illustrates the progress made from a standpoint of the number of such vehicles produced up to 1940. You can see they were coming into extensive use when the war started.

There is no doubt that during the war period many improvements have been made which will ultimately be applied to

RELATIVE PRODUCTION 6-WHEEL TRUCKS 6x4 AND 6x6 DRIVES

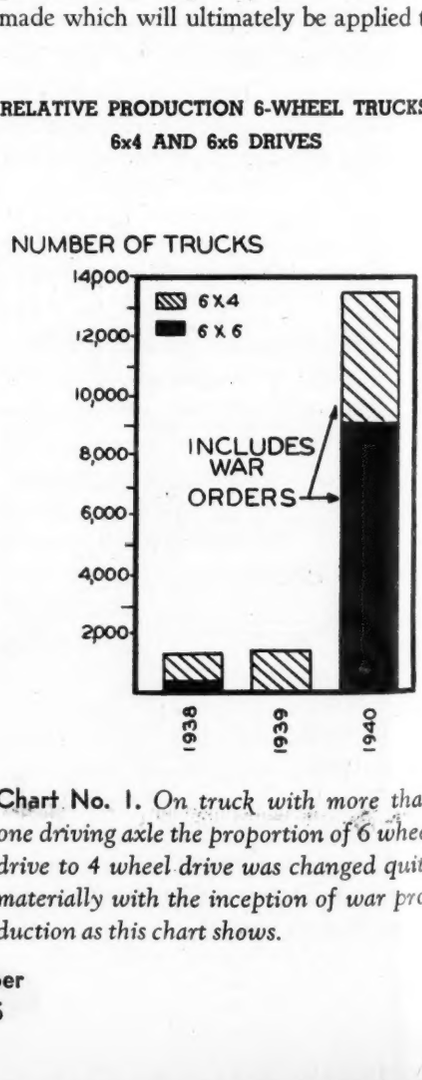


Chart No. 1. *On truck with more than one driving axle the proportion of 6 wheel drive to 4 wheel drive was changed quite materially with the inception of war production as this chart shows.*

commercial chassis and such component parts as the clutch, transmission, power-take-off, rear axle, cab, driver's seat, hose reels, meters, nozzles, pumps, etc. Some of these improvements will not appear at once but by the fall of 1946, they will be available if manufacturing progress continues and it is safe to predict that the majority of improvements which will be available for our industry for a period of the next three years will be on the market by that time.

Let's review some of the major changes that have been made and will continue to spell progress and ultimate economies.

A. F. Denham in "Twenty Years Progress in Commercial Motor Vehicles," a book distributed by the Military Division of the Automotive Council for War Production, amply illustrates some of the progress and these illustrations have influenced my thinking, and I believe should influence yours, in the selection of vehicles if you are to obtain the utmost from your purchasing and operating dollar.

Mass production of passenger cars produced low chassis costs. A manufacturer noting the possibility of adopting his basic passenger car chassis design to the commercial field started in 1921 to adapt it for commercial purposes. In twenty years we find an advance from a few choices of wheelbases, gear ratios, etc., to all of 150 models, any one of which might be adaptable to your use. Charts No. 2 and No. 3 show the trend in basic designs as regards models available to customers over a period of years.

During the past few years, the motor truck industry encountered a number of restrictions as regards overall length of vehicles and the result has been a development of a model known as the "Cab-Over-Engine." This particular type of unit enables an operator to maneuver within certain restricted areas and I have found them very practical for certain types of in-city work. The difficulty in the past has been that repair and maintenance of this type of unit has been costly and this factor tends to offset the practical advantage of maneuverability. On the other hand, during the past few years, there has been considerable development work done to improve this situation. Mr. H. E. Spear, deceased, formerly with the Shell Oil Company, did a considerable amount of work to solve this problem of engine inaccessibility and the results, I believe, are basic patents now held by given manufacturers. I am informed that at least one of the large manufacturers will adapt the theory of hinging the cab to models which will be brought out in the fall of 1946 and this will solve the shortcoming. The method of hinging the cab is shown in Photograph No. 1 and no doubt this is an idea that can be adopted by many. The trend in the use of "Cab-Over-Engine" vehicles is illustrated by Chart No. 4.

Many in the fueloil business will be interested in thoughts regarding the use of Diesel versus gasoline engine vehicles for this type of business. It is my studied opinion that Diesel engines have made considerable progress during the war period. Charts No. 5 and No. 6 illustrate the progress made up to 1942. The improvements that have been made in gasoline engines and the improvements in fuel, together with anticipated volume in the production of gasoline engines which produces low first cost, will result in but relatively few Diesel engines being employed in the retail delivery of fueloil. However, in all probabilities, over-the-road operators such as those on the West Coast and in the Middle West States, who have bulk delivery problems, will

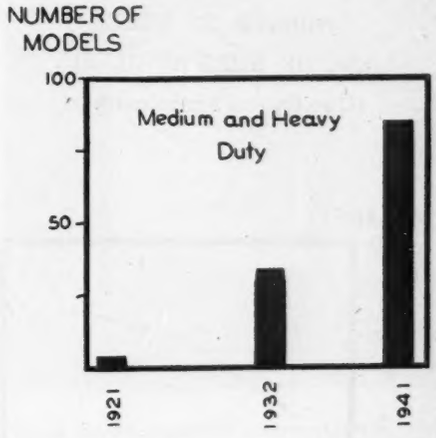


Chart No. 3. *This chart illustrates the effect of specialization on the manufacture of medium and heavy duty trucks.*

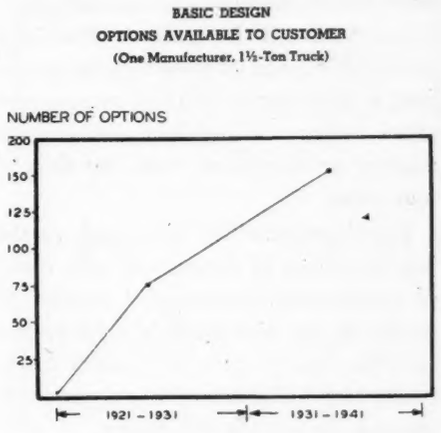


Chart No. 2. *The extent to which specialization has influenced even the 1½ ton mass-production field is shown by this chart, illustrating the increase in the number of basic options offered by one manufacturer of 1½ ton trucks. These include options in wheelbase, gear ratio, etc.*

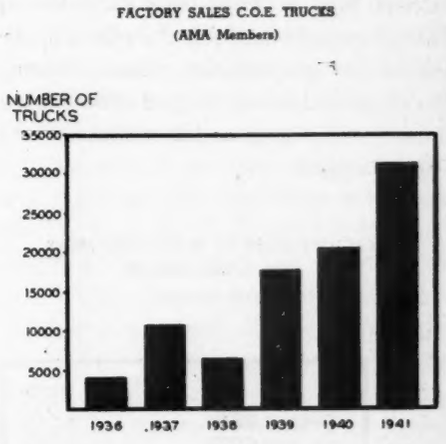


Chart No. 4. *The effect of increasing legal restrictions on over-all length of highway vehicles is illustrated by this chart showing the increase in production of cab-over-engine trucks and tractors.*

Plate No. 1. *Cab-over-engine truck with cab tipped to permit repairs to engine.*

find in the Diesel an economical tool, well suited to their use and capable of producing low costs, particularly if the country in which they operate is very hilly or mountainous.

Gasoline engines have made remarkable progress from a standpoint of refinement. Today I find them capable of operating 75,000 to 85,000 miles without going into the repair shop for overhauls; whereas, in 1920 if 20,000 to 25,000 miles were obtained before this occurred, it was considered very good performance. The operators who have equipment that is old should keep this practical point in mind. In addition, they should consider the fact that repair cost per mile and time out of service progressively increases after the vehicle has traveled 30,000 miles. Not only do repair costs increase but fuel and oil consumption is also affected. The advantage of using a late model truck as compared with an old one as far as oil consumption is concerned is illustrated by Chart No. 7 and may I point out that some vehicles produce far better results than others in this respect.

One of the important points in connection with any operation is the miles per gallon obtained from gasoline and lubricating oil. There can be no doubt that we are on the verge of obtaining much better grades of gasoline than heretofore produced. In order to obtain the maximum economies from a given type of fuel, it is necessary to adopt compression ratios which will produce the greatest mileage or economies from the fleet of tomorrow.

Rapid progress has been made in the last few years in connection with range of compression ratios and I suggest all operators give this phase of their engine selection very careful consideration. Chart No. 8 illustrates the progress made through the years in this respect.

One of the fields that has been explored carefully by the writer and which has resulted in a considerable improvement in my operating costs has been the average chassis weight per horsepower. Think of this for a moment and you might well dwell upon important points such as high grade alloy steel, potential use of aluminum, and the more detailed consideration of the tank and accessory designs, all of which will contribute to the subject of reduced weights. In this connection, it is my belief that the oil companies and tank manufacturers throughout the United States have contributed a great deal of engineering knowledge to the weight saving which has been accomplished. It was only a few years ago that a 1500 gallon tank truck operating upon solid tires when placed on the highway had a gross weight of 25,000 to 27,000 pounds. Today, this same unit seldom exceeds 22,000 pounds. The construction of better highways and low pressure tires have also contributed to this enormous change and again I emphasize the point that in many instances it is desirable to replace old heavily built tanks with those manufactured of modern materials. Tanks and chassis a few years ago had to be built strong to with-

(*Continued on page 96*)

NUMBER OF DIESEL ENGINE SIZES AVAILABLE
(One Engine Manufacturer)

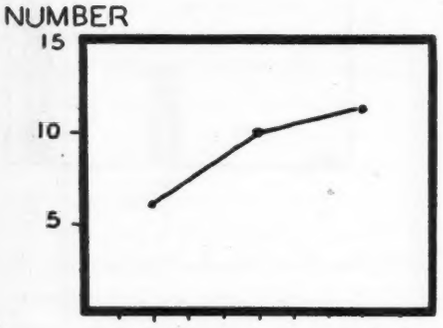


Chart No. 5. *Even manufacturers of Diesel engines have felt the effects of demand for specialization. One company, as illustrated above, has had to double the number of engine models available in the past six years.*

FACTORY SALES OF TRUCKS AND BUSES WITH DIESEL ENGINES
(AMA Members)

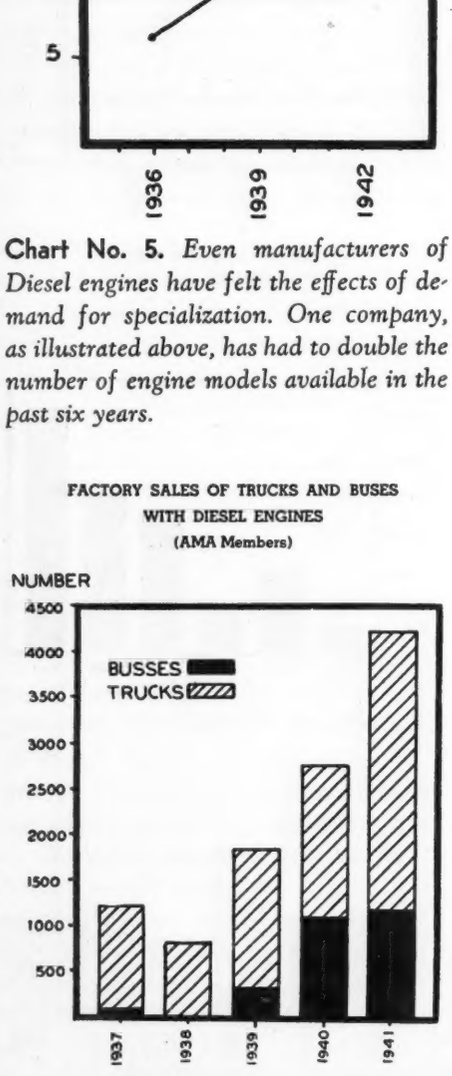


Chart No. 6. *Bus and truck production equipped with Diesel engines still represents a small but growing proportion of the total output, as this chart indicates. Diesel use has grown more rapidly for trucks than for buses.*

OIL CONSUMPTION
MILES PER QUART

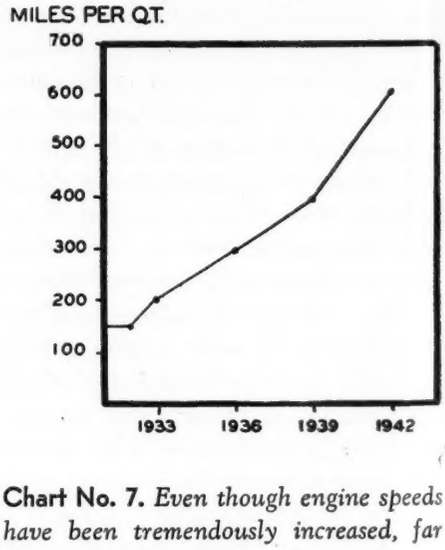


Chart No. 7. *Even though engine speeds have been tremendously increased, far less oil is used today than even nine years ago, as this chart of a representative company's trucks illustrates.*

RANGE OF COMPRESSION RATIOS
(6 Companies—8 Models)

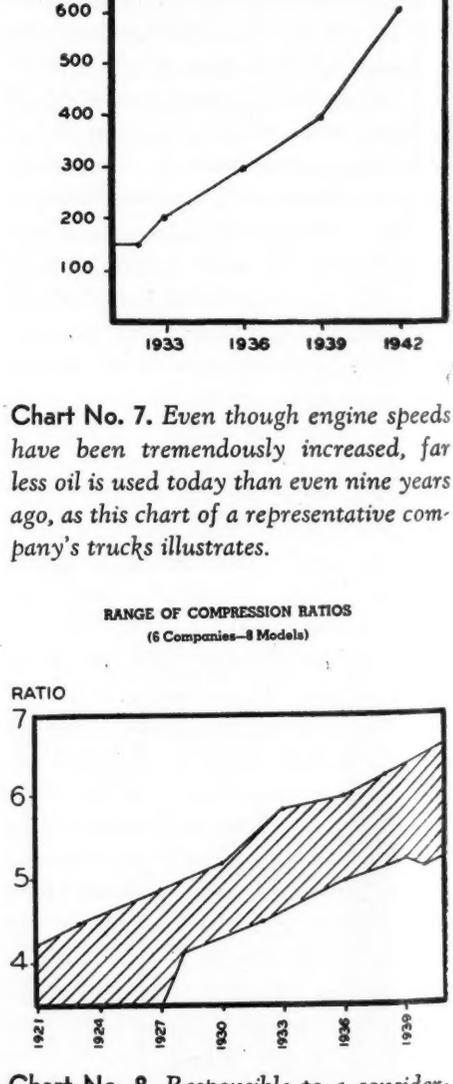


Chart No. 8. *Responsible to a considerable extent for the improved fuel economy of truck engines is the increase in compression ratio made possible by better fuels, improved combustion chamber design, better spark plug design and location, etc. This chart shows a 50% increase achieved in the past 20 years.*

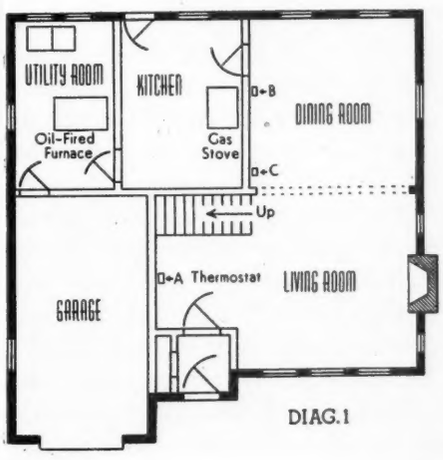
Avoid Thermostat Trouble

Useful Data for Men Who Select Thermostat Locations

By
J. W. Schulz

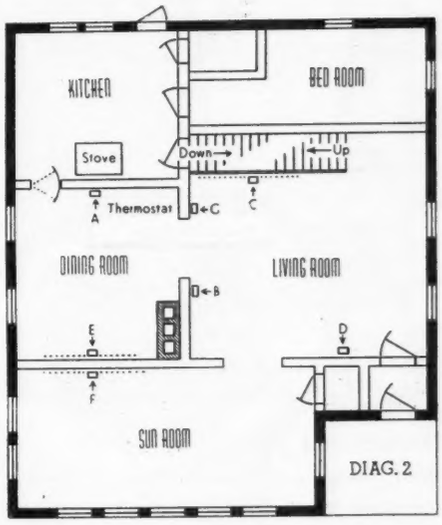
THE FOLLOWING NOTES on trouble jobs relate to selecting thermostat locations under usual and unusual conditions on small jobs and large jobs. They bring out the point that only good heating plants perform well when controlled by thermostats, and that trouble with the heating plant can be mistaken for thermostat complications.

Diag. 1 shows the first floor of a no-basement, two-story home which ran high fuel bills. Replacing the firebox, improving the heating plant, and combustion testing the burner did not end the complaint. Early during the trouble the dealer had checked the thermostat to make sure that it was calibrated properly and adjusted for suitable differential. He had found nothing wrong. Two years later, looking over the house on a service complaint, the dealer realized the house seemed very warm. The thermostat, at location A, was set at 70°. The thermometer on it read 72°. Then he placed his accurate pocket thermometer on the dining room table for 15 minutes, and got a reading of 82°. He found that with the room thermostat set for 70°, all the rooms were being heated to above 80°. The trouble? Because of flimsy construction and cracks around the garage doors, the temperature in the attached garage was 39° with the outside temperature 24°.



DIAG. 1

The thermostat was located on a cold wall. Objecting to having the thermostat moved because of the mark that would be left on the wall, the home owner offered to insulate the wall behind the thermostat with rock wool, or to install a larger radiator in the garage to heat it to 70°. The burner dealer explained, an insulated wall is still an outside wall, and with more radiation in the garage more oil would be used to heat it. Nor would the dealer install the thermostat at location B to please the owner. Too close to the gas stove, he said. He picked location C as the only spot in the house where the thermostat would give proper heating. As a result, the fuel bill dropped from $160 a year to about $125. The case is

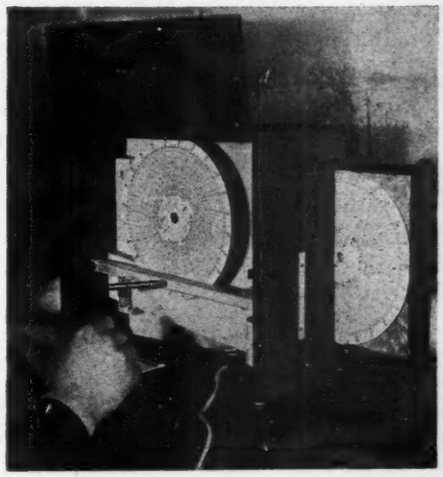


DIAG. 2

interesting because usually a home has three or four good places for the thermostat, but here the dealer decided that at only one spot in the house, at C, could the thermostat regulate the heat properly.

The case history connected with Diag. 2 is a classic. The happenings took place almost ten years ago and have been related many times, for the thermostat travelling that went on in this house has been equalled in few homes.

A stoker was sold to heat this house, and the salesman, following the custom in his company, selected the location for the room thermostat (A in the drawing). Within a few months, there were complaints about the house cooling down on



Home made recorder *writes starting and stopping time of burner on one chart for seven days.*

Sundays, although the thermostat was set for 74°. A check-up showed that when the gas stove in the kitchen cooked a big Sunday dinner, it heated the wall behind it sufficiently to keep the thermostat in its "off" position.

The service man who diagnosed the trouble moved the thermostat to location B. The heat was good during mildly cold weather that followed, but as the winter grew colder the owner discovered that heat from an inside chimney, which the service man had not noticed, was affecting the thermostat. The more the stoker ran for colder weather, the more heat came from the chimney. This gave such a temperature "droop" that in zero weather it was necessary to set the thermostat at 78° in order to get a reading of 70° from a thermometer in a bed room.

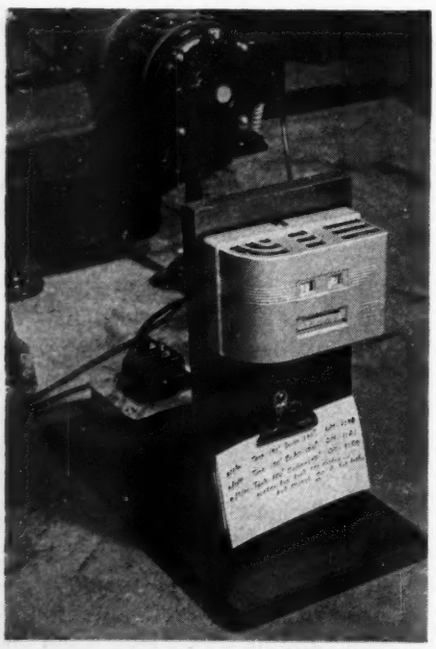
The owner then demanded that the dealer himself select the next, hoped-for final, location for the thermostat. Although the house was unusually large, the dealer found this a difficult assignment. First, he thought about location C. Immediately, now that he feared making a blunder, three objections to this location came to his mind. First, the thermostat would not look right at the side of the stairs, and the owner later might find fault with this odd location. Second, youngsters dashed up and down the stairs;

resultant vibration of this wall might make the thermostat "chatter" when adjusted for close differential, or fail to give a smooth, well-timed, on-off cycling. Third, the basement was cool and as the basement stair-well was on the other side of location C, this could not be considered a typical inside wall.

The owner decided he wanted the thermostat at location D, but the dealer pointed out this was too close to the outside walls and front door, and that slamming the door would affect the thermostat. When the dealer decided to install the thermostat at E, the owner crossed off that possibility because there the instrument would be over a sideboard and hard to reach.

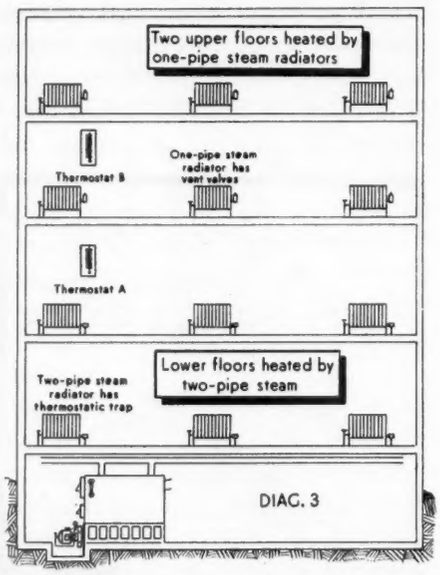
Location F, in the sun room, was rejected by the dealer—on the grounds that with the rest of the house heated properly the sun room would be too warm with the sun shining and too cold with the wind blowing at night. The house would chill on sunny days and overheat on windy days.

The cautious dealer finally selected location G, but before putting holes in the wall there he installed the thermostat on a high table and for two weeks made careful studies of the firing cycle, using an on-off recorder, and the temperatures in different rooms, using temperature recorders. The dealer's conclusion was that in this good-sized house, location G was the one good spot for the thermostat of all the seven points marked in the drawing. His troubles in this house impressed him so much that since then he himself selected the location for every thermostat put in.



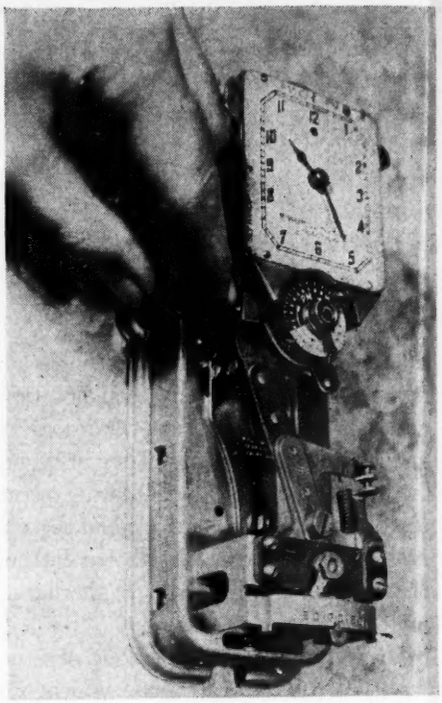
Clock thermostat *on special base counts hours of burner operation.*

A history of the heating plant is needed to understand the problem in Diag. 3. Years ago when it was coal-heated, the building had only two floors which were fitted with a representative two-pipe steam heating plant, regular thermostatic trap at the return connection for each radiator. About eight years before the oilburner was installed, two additional floors were added. Somehow, probably because he knew nothing about heating plants and accepted the contract offered by the lowest bidder, the owner bought one-pipe steam heating equipment for the two new floors. Coal-fired by a good


Two upper floors heated by one-pipe steam radiators
Thermostat B
One-pipe steam radiator has vent valves
Thermostat A
Lower floors heated by two-pipe steam
Two-pipe steam radiator has thermostatic trap
DIAG. 3

fireman and powered by a boiler which had been made larger by a generous amount, the building heated well even with the two lower, original floors heated by two-pipe steam radiation, and the new, upper floors heated by one-pipe steam radiation. The fireman reports that he simply carried two to five pounds steam pressure every morning from six to ten. Every radiator heated well and there were no complaints from the occupants of the building. Later check-ups showed, that the enlarged heating plant, half two-pipe steam and half one-pipe steam, was fired satisfactorily with coal for eight years before the burner was installed. The trouble started when an automatic, horizontal rotary cup oil burner was installed to burn heavy oil.

At first, the room thermostat was installed at A, in a very large room on the



Two adjustments *regulate frequency of "on" periods in old Chronotherms. Hand points to one adjustment.*

second floor—a room heated by two-pipe steam radiation. The first two floors of the building heated "perfectly," according to the owner of the building; they had never been heated as well and as smoothly with hand-fired coal. But through some mysterious freak of nature, the two upper floors, which with coal-firing had heated as well as the two lower floors, received no heat during the day after the burner had finished its first long "on" period, given by the clock-type room thermostat.

As it was plain that something had to be done in a hurry and this could be done easily, the dealer moved the thermostat to the third floor. The result of switching the thermostat location was that the third and fourth floors were heated properly, while the occupants of the two lower floors were almost baked alive because no matter how mild the outside weather was, the radiators stayed chuckful of steam every minute. And the oil bills skyrocketed to about twice the previous coal bills.

The dealer spent nearly two years trying out different tricks to make the room thermostats control the burner properly. In desperation at last, the dealer used a time clock to permit a thermostat at A to control the burner part of the day, while a thermostat at B controlled it the balance of the day. No matter what was tried,

Evidence of a Reliable Product

"DL" FLOAT VALVES

A "DL" Float Valve installed on a space heater, furnace, water heater or stove is evidence of a reliable product — good indication that the manufacturer has high standards of design, materials and workmanship—and that the whole unit will provide the utmost satisfaction to you and your customers.

It is the sort of a product you will want to sell.

"DL" Float Valves are simple and extremely dependable. They may be taken apart for cleaning with only a screwdriver for a tool kit.

They embody many features of advanced design, one of which is a simple, effective temperature compensation device to assure steady even fuel flow, regardless of fuel temperatures.

Thermostatic or manual types available.

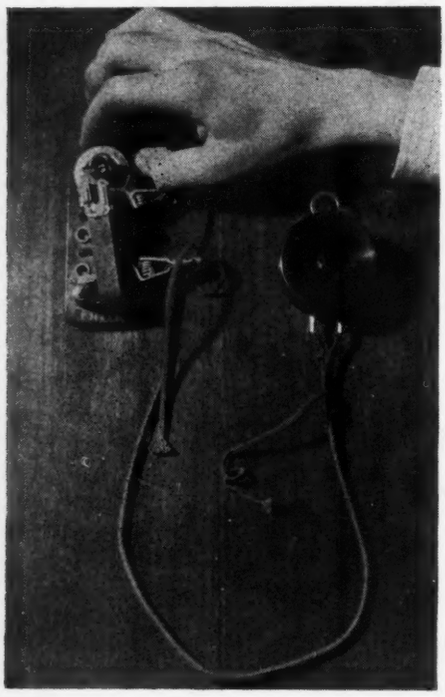
DETROIT LUBRICATOR COMPANY General Offices: 5900 TRUMBULL AVENUE DETROIT 8, MICHIGAN

Division of AMERICAN RADIATOR & Standard Sanitary CORPORATION

Canadian Representatives— RAILWAY AND ENGINEERING SPECIALTIES LIMITED, MONTREAL, TORONTO, WINNIPEG

"DL" Heating and Refrigeration Controls • Engine Safety Controls • Safety Float Valves and Oil Burner Accessories • "Detroit" Expansion Valves and Refrigeration Accessories • Stationary and Locomotive Lubricators

with thermostat A controlling the burner the upper floors received little or no heat, and with thermostat B in control the lower two floors were hopelessly over-



An ear phone may be used to check differential adjustments and calibration of Series 10 type thermostats.

heated. Turning the heating plant into a two-zone system was considered. The building owner was not interested, it was learned, in spending three times as much on zone control as he had spent for the burner. The owner pointed out, he had bought an oilburner which was supposed to be controlled properly by a room thermostat, and he was still waiting to get proper heat from the equipment he had bought.

For several years only a pressure control was wired to the burner. No room thermostat was used. The man who had fired the boiler with coal was re-instated and he simply turned on the oilburner main switch when he thought heat was needed, and turned it off at other times. This gave steam pressure control of the oilburner or no heat at all, but the outcome was fairly satisfactory heat together with oil bills not greatly oversize.

Next, an expert in special controls for large buildings approached the dealer and the owner. His special system which had no room thermostat but gave more heat for colder outside weather and less heat for warmer outside weather. He installed the system for trial, guaranteeing a 25% cut in the fuel bills. The new control seemed to turn on the burner for a certain number of minutes (perhaps 20 to 50, according to the adjustments used) and turn it off for a suitable length of time to match the outside temperature. And the dealer had already tried almost every conceivable cycle using different room thermostat arrangements. Also, the dealer had gotten considerable data from the help of recorders, whereas the heat control expert had none. Although the owner and the dealer became enthused over certain features of the special heat control system, the trial showed clearly that the system did not control the heat as well as the old fireman could control it by hand. The special system, as well as the room thermostat arrangements, gave

Old vent valves of obsolete design sometimes are the cause of trouble blamed on thermostats.

the two lower floors about five times as much heat as the two upper floors.

Then, finally, the oilburner dealer obtained outside help and found out the real cause of the trouble. The engineer he called in demonstrated, on a Sunday when the building was not occupied, that the heating plant could be operated very nicely with 20-minute "on" periods and 20-minute "off" periods, after all the vent valves had been removed from the one-pipe steam radiators on the two upper floors.

"I am not trying to prove you should operate the system without the vent valves," said the heating engineer. "I'm proving that you have venting trouble, whereas up to now you've been trying a dozen different control arrangements because you thought you had thermostat trouble.

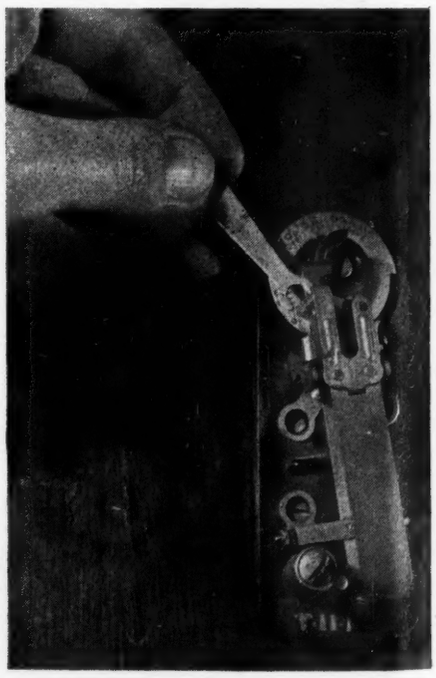
These steps were taken to balance the heating:

1. To speed the air venting rate of the one-pipe steam radiators, all the old-fashioned vent valves on them were discarded; on each radiator, the dealer installed two modern adjustable vent valves with exceptionally large vent ports. Also, 15 highly effective steam main quick vent valves were installed at strategic points in the one-pipe steam piping.

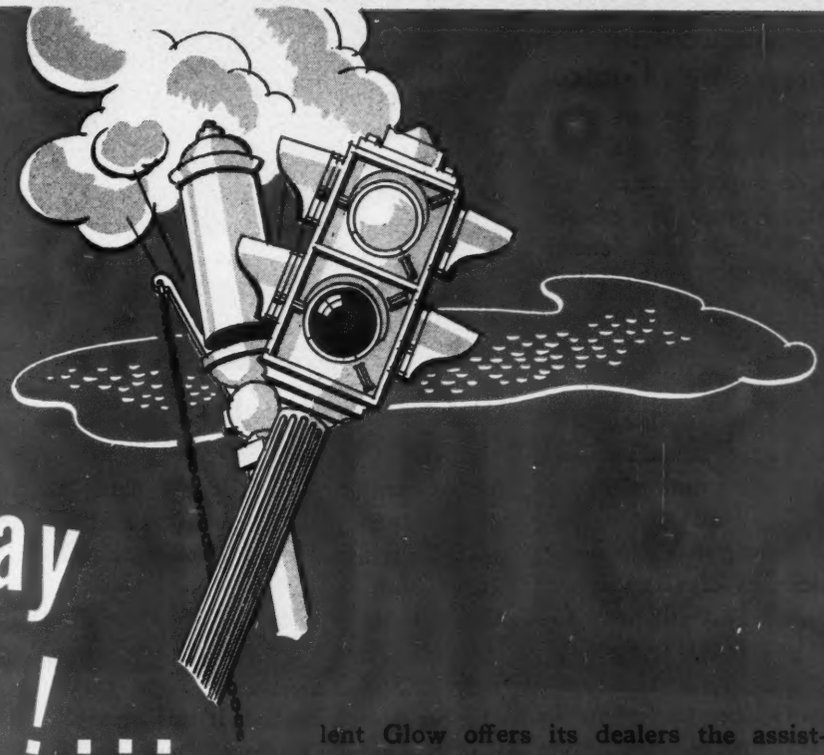
2. An orifice plate was installed in every radiator feed valve on the two lower floors to retard the flow of steam into the two-pipe steam radiators and build up a steam main pressure which would force air quickly from the one-pipe steam radiators. The orifices used for the different radiators were smaller than ordinarily would be used for the same size radiators.

3. For several days the burner was operated 20-minutes "on" and 60-minutes "off" by a timing device, and efforts were made to retard the heating of radiators

(*Continued on page 92*)



Small wrench is used to alter sensitivity of this thermostat. Turning to higher numbers gives longer on periods.

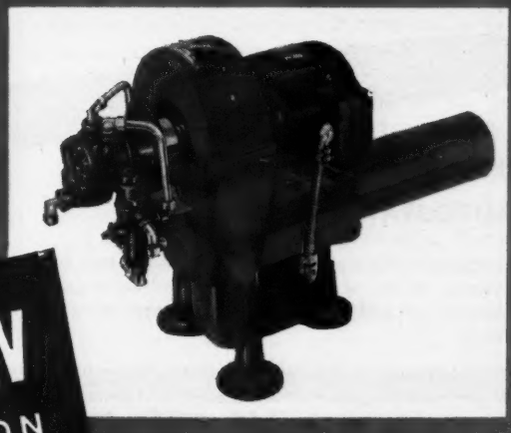


On the way again!...

NOW that the years of war have ended in complete and final victory, Silent Glow is once again devoting its entire facilities to the development and manufacture of fine oil heating equipment. Soon, the famous Air-Seel and a host of other outstanding Silent Glow burners will be giving unsurpassed performance in home and industry.

The oil burner dealer who holds a Silent Glow franchise during the coming period will possess a marked advantage over his competition. First, the quality and durability of Silent Glow burners are the result of more than twenty years of specialized research and production. Second, Silent Glow holds more patents pertaining to oil burners than does any other company in existence. Third, Silent Glow offers its dealers the assistance of the Industry's largest corps of specially trained field service engineers. Fourth, public acceptance of Silent Glow products is nation-wide because they are recognized as being unsurpassed for purposes of heating, cooking, or processing.

If you are interested in securing a Silent Glow franchise for your territory, we suggest that you write us without delay. We shall be happy to inform you if such an opening is available, and to acquaint you more fully with the many benefits to be derived from handling the Silent Glow line.



The SILENT GLOW
OIL BURNER CORPORATION
Hartford, Connecticut

Directive 59 Amendment Frees Distribution Control

PAW ANNOUNCED AN AMENDMENT TO Directive 59 on September 20, which removed controls on importation and distribution of fueloil, kerosene and gasoline in District 1 on September 30. Remaining provisions, such as definitions, price formulas, and zone boundaries have not been rescinded and will continue effective, as will new provisions.

One section of the amendment provides for an accounting method by which original suppliers in each zone established by the Directive shall make any necessary adjustments among themselves occasioned by inequalities of allocations

Another section provides that any supplier who fails to accept title to any quantity of product allocated to him by the close of business October 10, forfeits the product which shall then remain the property of the supplier against whom the assignment was issued.

A third section sets definite dates for the termination of various types of appeals made under Directive 59.

The PAW has been assured that enough ocean-going tankers will be available by September 30, to transport to the East Coast, together with deliveries by the War Emergency Pipelines, sufficient quantities of petroleum to meet all needs. Since the rates now chargeable by the War Emergency Pipelines are competitive with tankers, the scheduling provisions of Directive 59 will be unnecessary.

OHI Cancels October Semi-Annual Meeting

ON THE GROUNDS that there is nothing sufficiently important to discuss at a semi-annual meeting that would warrant any interruption of reconversion activity, President W. A. Matheson of Oil Heat Institute of America asked that the regularly scheduled meeting at New York, October 9, be cancelled. It was planned that the regular quarterly meeting of OHI directors be held as scheduled at the Commodore Hotel on October 9, and all interested members of the industry invited to attend as guests of the Board.

Preliminary plans for an oilburner show to be held in the spring probably were to be thoroughly discussed. It is felt that such a show will be urgently needed by that time to give dealers and the public a preview of oilheating progress that will then be making its initial appearance. Mr. Matheson has pointed out that competitive fuels are making noticeable headway in public acceptance, and oilheating needs the stimulus of an exhibition.

In a report to the membership, Mr. Matheson has repeated his belief that the problems of reconversion, linked with material and manpower shortages, probably will delay volume production of oilburners for sixty to ninety days. Shortages of parts, particularly castings and electric motors, are slowing present production and making it impossible for the industry to make any real headway toward supplying the enormous present demand for equipment. He pointed out that as late as July factory shipments where greater than production, and manufacturers stocks of finished burners were continuing to shrink, while the backlog of unfilled orders for domestic burners and units stood at an all-time high of 70,000.

Constructed for LONG LIFE!

THE SKUTTLE SERIES 300A AUTOMATIC HUMIDIFIER

● Here is an automatic humidifier that is designed and built to give longer service to the home owner. Its tank and valve assembly is made of pure copper and brass while the evaporating pan is vitreous enameled.

Just compare the features of this Skuttle 300A Humidifier with all other makes and you'll agree with thousands of furnace dealers and manufacturers that here is a humidifier that operates without continual servicing.

FEATURES

1 Adjustable collar for use on all types of bonnets.

2 Large inspection door for easy removal of evaporating pan.

3 Evaporating pan is completely inside furnace.

4 Rear support is adjustable and tight fitting to prevent leakage.

5 Anti-siphoning valve, standard equipment, *at no extra cost.*

● ***PROMPT SHIPMENT is assured. Write us today for prices.***

517 E. LARNED — Skuttle Mfg. Co. — DETROIT 26, MICH.

CUE... FOR PROFITS!

THE GREEN LIGHT IS ON . . . !

Go ahead, Mr. Dealer, and sell all the oil heating units you wish! . . . Now that the glad day has finally arrived, one of your greatest problems is to secure the installation and service help to do the job. . . . That is where we are ready to help . . . that is where a Master Kraft franchise will be just the ticket for you. WHY?

HERE ARE THE REASONS:

1. Every Master Kraft Postwar boiler unit or warm air unit WILL BE COMPLETELY ASSEMBLED AT THE FACTORY. It will be shipped to you in a case. It is small enough and light enough so two men can skid the case through an ordinary doorway — down the cellar stairs — knock off the boards — and there she sits, ready to fire!

2. **NEW EASY INSTALLATION!**
   Your installation will be greatly simplified. No heavy boiler or furnace sections to assemble in the cellar. No combustion chamber to build. No heavy conversion burner to set in place. No controls to wire! And no jacket to assemble — the unit is complete when it reaches you.

3. **NEW EASY SERVICING!**
   When you receive a service call on one of these units, you can change the motor, transformer, or pump in less than two minutes. All burner parts are almost instantly removable. Pull two pins, remove the old unit, slip a service unit in place, drop the pins back, and you are ready to fire again. This means simplified, quick, easy, service.

4. **NEW SELLING HELPS!**
   This new line will be advertised in national magazines, including Home Owners' Catalog, Small Homes Guide, American Home and other national magazines. Dealers will receive all manner of selling helps. This has always been the policy of Harvey-Whipple, Incorporated — to back their dealers with sales-producing publicity.

5. **NEW BUSINESS!**
   You will spend less time on installation and service work — which gives you more time for contacting new customers and selling more of these units.

MAIL THAT COUPON TODAY!

DON'T WAIT... MAIL THIS TODAY

HARVEY-WHIPPLE, INC. (DEPT. FO-4)
SPRINGFIELD 1, MASSACHUSETTS

Send me information on a MASTER KRAFT franchise.

Name.....

Street.....

City..... **State**.....

OPA Will Consider Higher Fueloil Ceilings

HOTTEST TOPIC AMONG fueloil distributors is the hope that the 3/10¢ margin originally added to cover rationing expenses may be retained to offset some of the added costs of doing business occasioned by the war and not associated with rationing—such as higher driver wages, increased maintenance costs, etc. OPA has stated that the 3/10¢ will definitely come off retail prices and dealer margins on October 31, but that it will give consideration to raising ceilings in individual areas if the industry submits convincing proof that relief is necessary. This position was stated by Eugene D. Uman, price executive of the Petroleum Branch, in a September 11 letter. The principal portions of the letter follow:

"We believe you are familiar with the action taken whereby the .3¢ per gallon increase incident to rationing on fueloils at the tank wagon level has been reinstated for a period extending through October 31, 1945. As of November 1, we will have the regulations coordinated in a manner which will automatically remove this .3¢ per gallon in all areas simultaneously.

"In the meantime, where sellers in a particular tank wagon area or locality submit information to the OPA Regional Office to indicate that a wider margin is necessary, consideration will be given to new ceilings to become effective November 1, 1945. We will, of course, take into account the margins obtaining in the given locality. Since margins are different in the various tank wagon areas even within the same general territory, it is probable that if the prices after November 1 should be changed over base period prices, such changes could only be sustained in areas where the distributor margins are relatively low."

There has been wide diversity of retail margins over tank car prices, as low as 1.4¢ in some Mohawk Valley spots and as high as 2.1¢ in Boston, just as there has been considerable variation in costs of doing business in different centers. If in any market the distributors can prove without question, from their own operating records, that well managed companies cannot make profits under present margins, OPA is obligated to give price relief. This has always been true, but the fact is highlighted at the moment by the agency's willingness to tie any fresh studies to the October 31 dateline.

As a practical consideration, however, OPA has so few field men left that could understand the considerations involved, that individual market relief is pretty sure to be slow in coming, in spite of the bigwigs' willingness.

◈

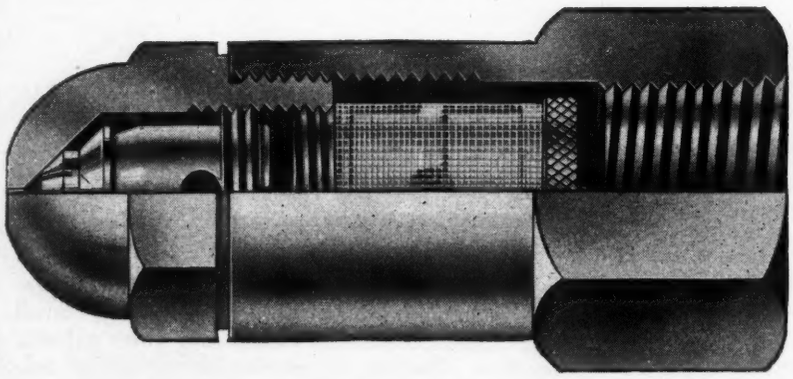
James C. Scully, recently appointed director of the Fuel & Automotive Rationing Division, OPA, has now been advanced from that spot to become OPA's assistant administrator, in charge of all local board activity throughout the country. *Clyde Graves* and *Carl Lunsford,* section chiefs in the Fuel Division, are assisting Scully in the new activity.

Lt. Col. Frederick Kraissl, Jr., has left active military service after two and one-half years, and returned to the Kraissl Co., Hackensack, N. J., of which he is president. During the last phases of the war Kraissl was in charge of war plant protection, and was previously engaged in chemical warfare activities.

EDCO

OIL BURNER NOZZLES

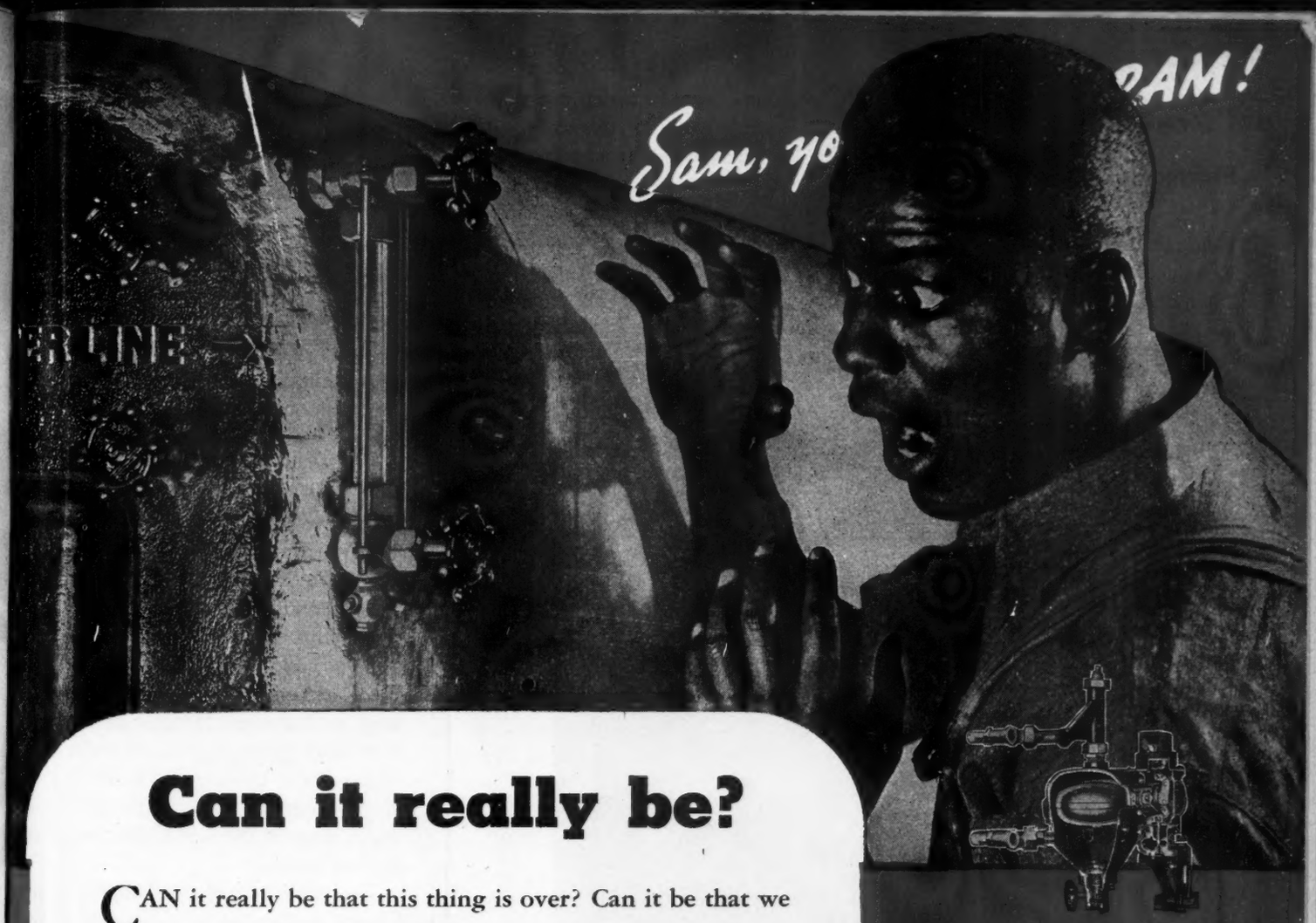
are now available



And even better nozzles than we made before, thanks to a tremendous amount of invaluable war time experience. Edco Nozzles have been improved by the latest scientific methods, are painstakingly checked and tested for spray angle, atomization and actual rated capacity. They're made from the finest grade of stainless steel and *their performance is unqualifiedly guaranteed.* All sizes.

Please place your order in advance of actual need and give complete information about capacity, spray angle, quantity, etc.

EDDINGTON METAL SPECIALTY CO.
P. O. BOX K, EDDINGTON, PENNA.



Can it really be?

CAN it really be that this thing is over? Can it be that we can really begin to make boiler feeders and low water cut-offs for Joe Doak's boiler? Can it be that we can begin to put the "Sam-you-better-scram" idea back to work for you right here on the home front?

Well . . . at first it all seemed like a dream. But the butcher did act a little bit friendly yesterday and a fellow in a filling station did say "shall I fill her up?" So it looks like it really has happened.

But don't infer from this that same-day shipments of boiler feeders are just around the corner. They're still a good way off . . . *but* . . . near enough for you to begin sowing seeds right now for profitable sales of feeders and low water cut-offs in the good old home community.

Products covering a wide range of needs are listed opposite. Ask for new Condensed Catalog and Price List.

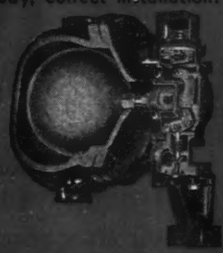
McDONNELL & MILLER, *Inc.*, 1310 Wrigley Bldg., Chicago 11, Ill.

Doing One Thing Well

REG. U. S. PAT. OFF.

Your Jobber Stocks Them

No. 47-2 Feeder-Cut-off Combination for boilers below 5000 sq. ft.; maximum steam pressure, 25 lbs. Quick-Hook-Up for speedy, correct installation.



No. 51-2 Feeder-Cut-off Combination. Functions same as 47-2, but for boilers larger than 5000 sq. ft.; maximum steam pressure, 35 lbs.

No. 67 Low Water Cut-off for all automatically fired boilers; maximum steam pressure, 25 lbs.

No. 150 Water Level Control for boilers of any size with steam pressures up to 150 lbs. Used as feed-pump control; low-water cut-off; low water alarm, or any combination of these functions.

McDONNELL

Boiler Water Level Controls

Industry Groups

Refrigeration & Airconditioning Association Holds Show

PAVING THE WAY for the production and introduction to the public and dealers of "many of the miracles of domestic, commercial and industrial refrigeration and air conditioning" developed during the war, the Refrigeration Equipment Manufacturers Association has scheduled a full year's series of events designed to coordinate the industry and speed its huge peacetime manufacturing program.

Beginning this fall, this series will come to a climax with the resumption in the last week of October, 1946, of REMA's all-industry refrigeration and air conditioning show for which a quarter of a million square feet of floor space already have been contracted in the Cleveland Public Auditorium. This show, last held in Chicago just before the war, will contain exhibits of new products covering every phase of mechanical refrigeration and air conditioning and including equipment for enhancing personal comfort, improving the freezing and preservation of food, and rounding out the more than 200 services refrigeration now performs.

ASH&VE Research Relates Airconditioning to Hygiene

ON OCTOBER 1, Allen D. Brandt, Sc.D., Senior Sanitary Engineer, U. S. Public Health Service, commenced his duties at the ASHVE Research Laboratory to conduct studies involving the relationship of air conditioning and ventilation to industrial hygiene.

His assignment was authorized by the U. S. Public Health Service and is welcomed by the Committee on Research of the American Society of Heating and Ventilating Engineers.

Dr. Brandt is a native of Pennsylvania, was graduated from Penn State College in 1931, and received the Rockefeller Foundation Fellowship for advanced work in Industrial Hygiene at Harvard University, where he studied under Professors Philip Drinker and C. P. Yaglou. His research and thesis for the Doctorate degree were in the field of air conditioning and health.

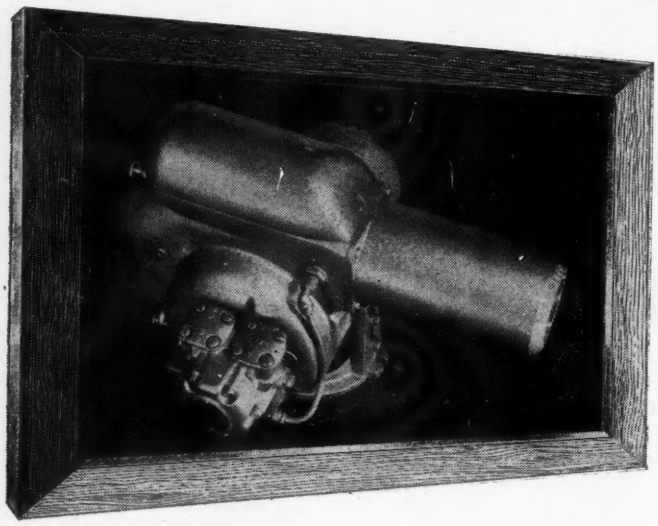
The Society conducted its Fall Conference at Cleveland October 6-8. In addition to general committee meetings, business meeting and inspection of the ASH&VE research laboratory, papers were presented on "The Relation of the Ventilating Engineer to Industrial Hygiene," by H. C. Dyktor, "Transmission of Solar Radiation Through Flat Glass Under Summer Conditions," by George V. Parmelee, "A New Friction Chart for Round Ducts," by D. K. Wright, Jr., and "The Air-Cooled Human Body," by the Society's president C. E. A. Winslow.

Mass. Oil Heating Assn. Hears Lacy on Sales Problems

AT ITS FIRST MONTHLY meeting of the Fall season at Boston's Fox & Hounds Club September 18, the Massachusetts Oil Heating Assn. had as principal speaker Jack Lacy, widely experienced merchandising consultant, who discussed "The Salesmens' Problem in the Competitive Field." Fred Beckwith is active director of the association.

◈

John Renick, of the firm of Renick & Mahoney and long active in local fueloil association affairs, died September 15 at his New York home.



One of The Family

It isn't uncommon for people to tell us, "We've had our Herco so long it seems almost like one of the family."

Year after year, Herco Oil Burners have provided warmth and comfort, dependable service and thrifty fuel consumption for the thousands of households to which they belong.

Because they are built for long, trouble-free service, they'll build a long list of loyal customers for the man who sells them.

If you are interested in handling a really superior oil burner, send us your name and address. We'll get in touch with you as soon as we can promise delivery dates.

HERCO OIL BURNER CORPORATION
LANCASTER, PA.

Western States Representative:
Harold Winningham & Company
Main Office:
1112 Second St., Seattle, Washington
Branches In:
San Francisco, Los Angeles, Salt Lake City, Denver and El Paso.

HERCO
The Oil-Thrifty
OIL BURNER

Allen's

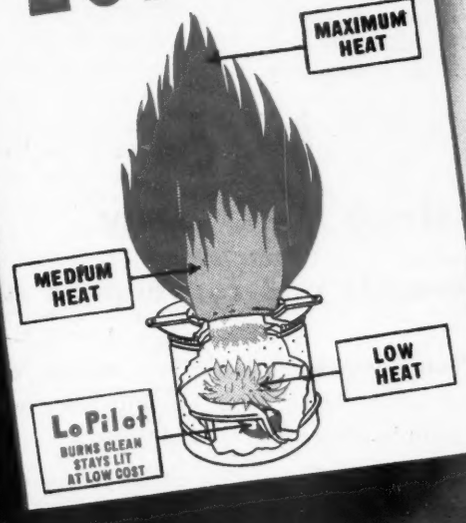
THE ONLY

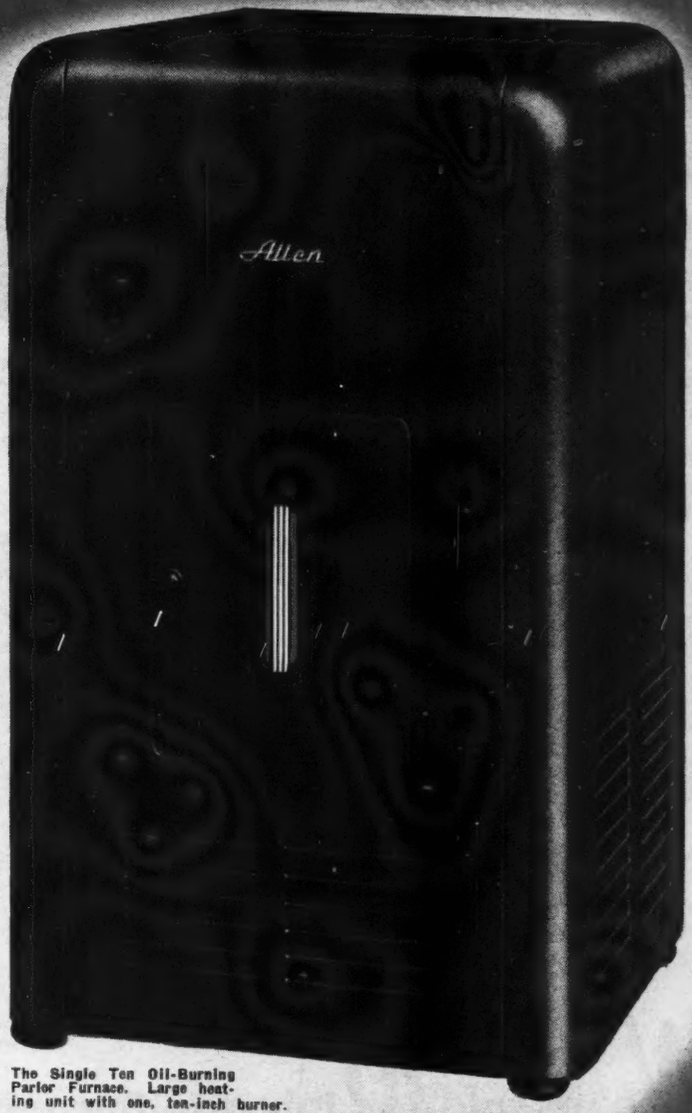
OIL-BURNING HEATER

WITH THE

LOW COST

LoPilot





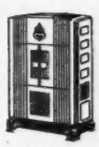
The Single Ten Oil-Burning Parlor Furnace. Large heating unit with one, ten-inch burner.

LoPilot is a marvel in efficiency and low cost. Wire your nearest Allen Distributor for Franchise Details.

ALLEN MANUFACTURING CO., INC.
NASHVILLE, TENN.

Oil-Burning Water Heater

Princess Range Coal—Wood


Coal Burning Parlor Furnace

Combination Range—Combination)

ALLEN DISTRIBUTORS

THE YANCEY CO., INC.
Atlanta, Ga.

J. R. HUNT & CO.
Baltimore, Maryland

WESTERN MERCHANDISE DIST., INC.
Buffalo, New York

UNITED DISTRIBUTORS, INC.
Cambridge, Mass.

SOUTHERN RADIO CORP.
Charlotte, N. C.

CAR PARTS DEPOT
El Paso, Texas

MAJOR DISTRIBUTING CO.
Cincinnati, Ohio

SMALL & SCHELOSKY CO.
Evansville, Ind.

MORLEY-MURPHY CO.
Green Bay, Milwaukee, Wisc.

D & H DISTRIBUTING CO.
Harrisburg, Pa.

ROYAL DISTRIBUTING CO.
Houston 2, Texas

SOUTHERN WHOLESALERS, INC.
Jackson, Mississippi

MURRAY-BROOKS HARDWARE CO., LTD.
Lake Charles, La.

GOUGH INDUSTRIES, INC.
Los Angeles, Calif.

STRATTON-WARREN HDWE. CO.
Memphis, Tenn.

MAJOR APPLIANCES, INC.
Miami, Tampa & Jacksonville, Fla.

MASDA CORPORATION
Newark, N. J.

GEO. H. LEHLEITNER & CO., INC.
New Orleans, La.

UNITED DISTRIBUTORS, INC.
New Orleans, La.

HARPER & McINTIRE CO.
Ottumwa and Cedar Rapids, Iowa

ARIZONA WHOLESALE SUPPLY CO.
Phoenix, Arizona

APPLIANCE WHOLESALERS OF OREGON
Portland, Oregon

NELSON & SMALL
Portland, Me.

WYATT-CORNICK, INC.
Richmond, Va.

DALCO APPLIANCE
Sacramento and San Francisco, Calif.

WYETH HARDWARE & MFG. CO.
St. Joseph, Mo.

RYAN RADIO & ELECTRIC CO.
St. Louis, Mo.

MOTOR POWER EQUIPMENT CO.
St. Paul, Minn.

MOUNTAIN STATES DISTRIBUTING CO.
Salt Lake City, Utah

RADIO TELEVISION & APPLIANCE CO.
Seattle, Washington

RUDNING-ROBERTSON CO.
Sioux Falls, S. Dakota

SEATTLE RADIO SUPPLY, INC.
Spokane, Washington

MASCON DISTRIBUTORS, INC.
Springfield, Mass.

EDWARD JOY COMPANY
Syracuse, New York

H. A. McRAE & CO., INC.
Troy, New York

Manufacturers Activities

Combustion Utilities Offers Advisory Performance Service

COMMERCIAL AND INDUSTRIAL oilburner users can avail themselves of an advisory service for solving operating difficulties and improving combustion efficiencies by means of a diagnosis chart developed by Combustion Utilities Corp., New York. The service is without charge.

With changing fuel characteristics creating new problems in oil-air ratios to avoid smoky stack, excess carbon, etc., analysis of certain individual difficulties is obviously of benefit.

Four Active Octogenarians at Smith Boiler Plant

THE ACCOMPANYING PHOTOGRAPH pictures four employees of The H. B. Smith Co., Inc., Westfield, Mass., boiler makers, each of whom is 80 years old this year. These men have been on the job daily through the strenuous war period as they had been for many years before that.

Two hundred sixteen years of service

Pictured, left to right, are John Sime, chief electrician, 36 years with Smith, William H. Angell, patternmaker, with 59 years' service, Edmund Kent, yard foreman, 56 years, and Edward L. Bosworth, machinist, who has worked for Smith 65 years. With a combined service total of 216 years, such groups are rare in today's troubled labor market.

Oil-O-Matic Service Schools

A SERIES OF Oil-O-Matic factory-conducted service schools was held throughout New England and the Atlantic Seaboard. Each school was a two-day session in charge of N. A. (Pat) Palmer of the factory's technical staff.

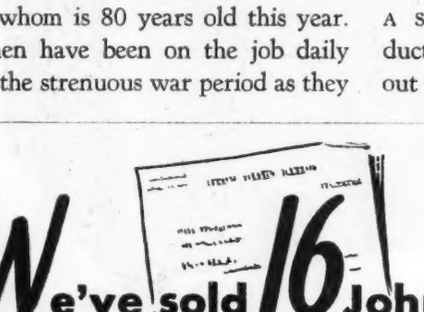
Five schools were scheduled, as follows:

Springfield, Mass.	Sept. 24-25	Kenmore Hotel
Boston, Mass. ..	Sept. 27-28	Astor Hotel
New York	Oct. 1-2	Adelphia Hotel
Philadelphia ...	Oct. 4-5	John Marshall Hotel
Richmond, Va. .	Sept. 20-21	Kimball Hotel

In addition to Mr. Palmer, the following factory field representatives attended the schools in their territories: Springfield—divisional manager C. Allen Fisk and district representative J. C. Cooper; Boston—C. Allen Fisk and J. C. Cooper;

(*Continued on page 70*)

"We've sold 16 Johnson Burners since V-J Day on replacements and conversions alone"

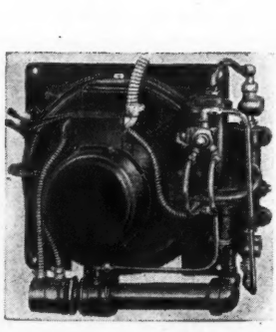


"... and the *new* building program hasn't even started rolling yet. When all those new houses begin going up (our town needs 600) we're going to put Johnson Burners in a lot of them.

"Already we are pretty happy about taking on the Johnson franchise. Looks like the smartest move our firm has made in fifteen years. Johnson Burners certainly have a backlog of good will which makes our selling job easier to do."

★ ★ ★

That "backlog" isn't just a lucky accident. We've put 42 years of single-minded effort into its building . . . 42 years of research and careful engineering and painstaking craftsmanship. It's an asset for our dealers all over America. It's one of the reasons why it might pay you to start selling Johnson Burners if there is a dealership open in your territory. We'll gladly let you know.



The Johnson Burner line is a *complete* line. Johnson dealers can fill *every* need . . . from a skyscraper to a 5-room cottage . . . with a burner *exactly right* for the job.

Johnson Oil Burners

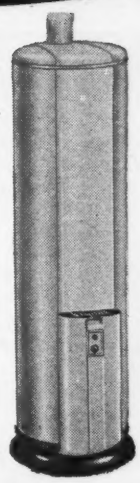
S. T. JOHNSON CO.
940 Arlington Ave., Oakland 8, Calif.
401 No. Broad St., Philadelphia 8, Pa.

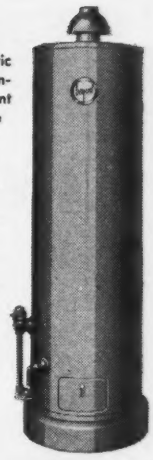
Builders of fine Oil Burner Equipment since 1903

Complete Line

EQUIPMENT IN THE NATION!

INCLUDING WATER HEATERS



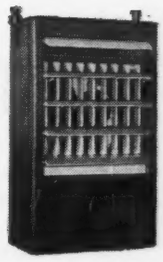


Six new automatic water heaters are included in the Bryant Heater postwar line

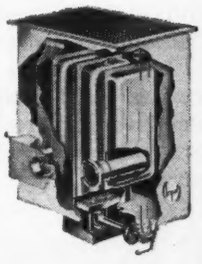
The new streamline water heater matches the modern note of many postwar home designs

And many specialities

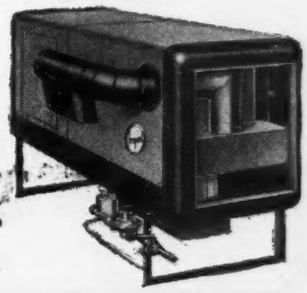
Conversion burners to meet postwar modernization demand



Unit heaters for garages, stores and shops



Floor furnaces in four types to fit every requirement



Forced-air, horizontal space-saver unit for attic installation

• Here it is . . . the postwar gas heating equipment you hoped would come . . . the Bryant Heater line that paves the way for aggressive dealers to go places in the greatest heating market ever opened!

No matter whether your prospect is a new home builder or is modernizing an old home, there is equipment in the improved and expanded Bryant Heater line to fit the job and make a profitable sale.

You can offer boilers with age-resisting cast iron sections, winter air conditioners and gravity furnaces in *both* cast iron and steel heat exchanger models. A group of diversified floor furnaces, wall and space heaters answers small home and individual room heating problems. Specialties, such as conversion burners, attic-installed space-saving heaters and unit heaters complete the picture to meet every heating requirement. All this, plus a new line of Bryant water heaters in a wide range of sizes and prices.

Advertising in national magazines—*more than 13,000,000 four-color printed impressions this year*—has been telling and selling the public on the advantages of buying Bryant Heater equipment, produced by the pioneers of residential gas heating. Colorful new literature and store display materials, as well as an effective radio and newspaper advertising campaign for use in *your own city,* will be ready to help you sell.

Ask the nearest Bryant Heater distributor to give you the complete story, told in the factual presentation, "Postwar Picture of Home Heating." You'll agree with hundreds of other dealers who say . . . *"now's the time to tie up with Bryant!"* Bryant Heater Company, 17825 St. Clair Ave., Cleveland 10, Ohio—One of the Dresser Industries.

bryant
GAS
HEATING

LET THE PUP BE FURNACE MAN

fuel oil & oil heat

New York—divisional manager L. G. Brown and district representatives George M. Cormack and Stephen Dowling; Philadelphia—divisional managers J. H. Skaggs and T. H. Green and district representatives Hugh H. Hackett, Sr., and George M. Cormack; Richmond, Va. —divisional manager T. H. Green.

Subjects covered at the two-day schools include: latest information on the company's Lo-Pressure and Hi-Pressure burners; instructions on how to figure heat loss (with and without insulation), how to figure domestic hot water loads, how to estimate fuel consumption. Newest installation techniques were presented.

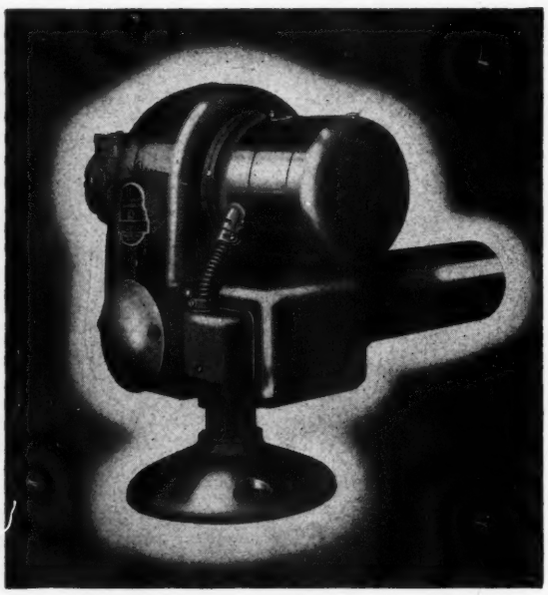
Socony Launches Largest Fueloil Advertising Program

LAUNCHING THE LARGEST advertising campaign in the company's history to promote the use of oil for home heating, Socony-Vacuum Oil Company, Inc. has selected 364 newspapers in the New England and Middle Atlantic States to push the use of Mobilheat fueloil in this area. Total combined circulation of the media selected is 12,801,000.

Performing a sales job for the entire industry, Socony-Vacuum stresses the theme that "oil is the preferred fuel for automatic heating" because it is clean, convenient and economical.

Now that the war is over, advertisements note, oil is plentiful and Socony-Vacuum's automatic delivery service saves home-owners the trouble of checking their supply and prevents the annoyance of a dry tank.

The advertising campaign for Mobilheat will continue through April. Advertisements are one-third page size.



BETTENDORF *oil burners*

The high standard of materials and precision of manufacturing incorporated in Bettendorf Oil Burners assure profitable sales and customers' good will. During the process of fabrication, Bettendorf burners must meet rigid requirements covering machining and assembly operation. Every burner fire tested before crating. For profitable sales, select the Bettendorf Oil Burner.

BETTENDORF OIL BURNER COMPANY

Marshalltown, Iowa

Brown Instrument Announces Full Post-War Production

CONTINUED FULL EMPLOYMENT and maximum production went into immediate effect on August 17 at the Philadelphia plant of Brown Instrument Company, a division of Minneapolis-Honeywell Regulator Company.

E. B. Evleth, vice president of the industrial instrument division of Minneapolis-Honeywell Regulator Company stated shortly after cessation of hostilities that the Brown company had few reconversion problems. Brown products, he pointed out, require no changes from war to normal requirements.

"Economic studies, including wartime planning for peace, have made it possible for our company to avoid most if not all reconversion problems," said Evleth. "We are fortunate," he added, "that we are producing the same electronic and other standard instruments for peace that we produced, entirely for war, during the past four years. The only changes involve technological improvements, induced and perfected in war."

Dust-Stop Advertising to Promote Warm Air Industry

UNIQUE IN THAT ITS emphasis is upon selling the prospective home builder or buyer on the over-all advantages of forced-warm-air heating and air conditioning, the new advertising campaign for Fiberglas Dust-Stop Air Filters includes a program of insertions in six nationally circulated consumer magazines which will tell Mr. and Mrs. America why they should demand forced-warm-air heating and air conditioning in their new home.

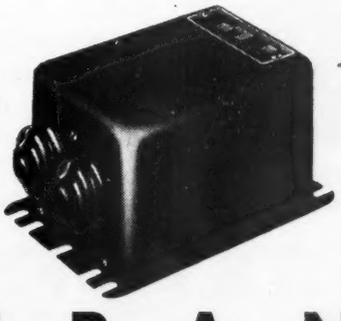
The insertions are sponsored by

(*Continued on page 74*)

● The developments in radar, radio, television, electronic and electrical apparatus of all kinds made during the past four years will have tremendous influence on your future.

The unusual developments in transformer design, application and production,—the further confirmation of Jefferson Electric ability to produce transformers in great quantities with unsurpassed uniformity and accuracy,—will help insure the successful performance of your post-war products.

Look to your future, now, by consulting the Jefferson Electric staff of transformer specialists. JEFFERSON ELECTRIC COMPANY, Bellwood (Suburb of Chicago), Illinois. In Canada: Canadian Jefferson Electric Co., Ltd., 384 Pape Avenue, Toronto, Ont.



JEFFERSON
ELECTRIC

TRANSFORMERS

fueloil
& oil heat

Owens-Corning Fiberglas Corporation and are believed to mark the first instance in which a manufacturer of air filters has undertaken an over-all selling job on behalf of the forced-warm-air heating and air conditioning industry. Starting in October, the advertisements will run through fall, winter and early summer.

The list of consumer publications in which Dust-Stop advertising will appear includes the *Saturday Evening Post, American Home, Better Homes and Gardens, House Beautiful, Parents' Magazine, House and Garden.*

Atlantic Refining Reverses Keystone Line

THE ATLANTIC REFINING COMPANY announced that it had reversed the flow in its Keystone Pipeline, which extends from Philadelphia to Pittsburgh, and was sending products into its marketing area west of Harrisburg. All during the war this line was used to bring crude oil east from Pittsburgh to its refinery.

Prior to the war, Atlantic received the great bulk of the crude oil needed at its Philadelphia refinery by tankers from the production fields of the Southwest. The Keystone Pipeline was built to transport refined oil products westward. Shortly after Pearl Harbor, the Company's tanker fleet was turned over to the Government for war service and it had to get most of its supplies by railroad tank cars and pipelines.

The Company rapidly converted its facilities so that the Keystone Pipeline could be used to transport to Philadelphia crude oil brought to Pittsburgh from the production fields. This reversal in flow was in operation early in 1942.

WITH a bigger-than-ever demand for home heating oil predicted between 1946 and 1951, competition will be a lot stiffer, so . . .

BE READY WITH

Mobilheat

SOCONY-VACUUM HEATING OIL

Mobilheat

- **Member of America's Favorite Petroleum Product Family . . .**
- **Already One of America's Largest-Selling Fuel Oil Brands . . .**
- **Backed by Great Resources—Tremendous Petroleum Research and Marketing Experience!**

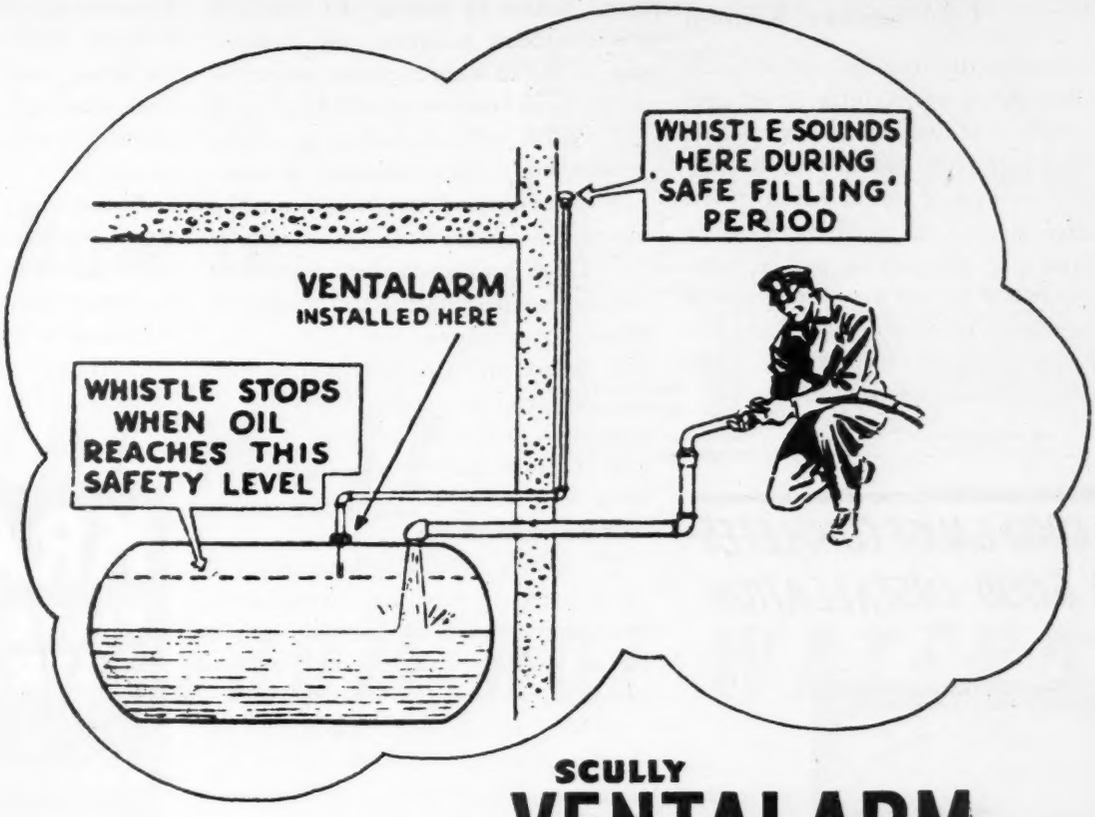
Westchester Oil Trade Assn. Undertakes Eng. Standards

THE WESTCHESTER OIL TRADE ASSN., in suburban New York, has recognized the vital importance of over-all consumer satisfaction with oilheating by undertaking to set up installation and performance standards through an Engineering Standards Committee. Once the standards have been approved and adopted the membership is to adhere to them, and the Association is to informally police them.

The Standards Committee has as its objective the establishment of uniform installation and service practices, the conducting of a training center for service men, the preparation of lectures and instruction to effectuate the standards, examination of eligibility of service men, issuing of certificates of craftsmanship to qualified mechanics, and advising the Association's Publicity Committee on the various approaches to the public to make the standards work known.

Ed Goodwin became sales manager of the Furnace and Airconditioning Div. of Perfection Stove Co., Cleveland, on Sept. 1. The first furnace salesman employed by Perfection, Goodwin covered the Middle West, always maintaining top position in sales volume and dealers appointed. Before joining Perfection was 12 years with Standard Sanitary.

L. B. Keplinger has resigned as vice-president and director of Rheem Mfg. Co., to join Steel Shipping Container Institute.


WHISTLE SOUNDS HERE DURING 'SAFE FILLING' PERIOD
VENTALARM INSTALLED HERE
WHISTLE STOPS WHEN OIL REACHES THIS SAFETY LEVEL

When you install a burner

SCULLY
VENTALARM
T.M. REG. U.S. PAT. OFF.
The Whistling
FUEL TANK SIGNAL

be sure the tank is equipped with Scully VENTALARM.

VENTALARM will repay its cost in the first 5 deliveries

and — if you retain that customer — VENTALARM should repay its cost **20 times** in delivery savings alone

and the way to retain the customer is to provide the safe automatic non-entry-into-the-home delivery which VENTALARM makes possible.

350,000 VENTALARMS now making money for more than 2000 oil companies

SCULLY SIGNAL COMPANY
88 FIRST ST., CAMBRIDGE 41, MASS.

Also Standard Equipment on AUTOMOBILES, BUSES, TRUCKS *and* DIESEL LOCOMOTIVES

MANUFACTURED IN CANADA BY EMPIRE BRASS MFG CO. LTD. LONDON ONTARIO

Building Restrictions Off October Fifteen

RESTRICTIONS IMPOSED ON PRIVATE and public building will be lifted on October 15, when L-41 will be withdrawn, according to an announcement by John W. Snyder, director of war mobilization and reconversion on September 18. Price Control over all materials will be maintained by OPA, and the control will be strengthened in some lines. There is a six-point program planned to speed building. This program includes:

1. An active campaign by interagency action to increase the supply of scarce building materials, and if necessary price and wage increases and priorities to break bottle-necks will be granted.

2. WPB will strengthen inventory controls to prevent hoarding of materials so building will not be hampered by shortages.

3. OPA will strengthen price controls of building materials to counteract inflationary pressure.

4. Federal credit agencies will discourage excessive and unsound lending on mortgages, and enlist voluntary cooperation of banks and other lending institutions, in order to avoid inflation due to excessive demand.

5. Industry groups will be called to Washington to map out a program to increase production of materials and facilities needed, and to fight inflated building costs and real estate prices.

6. National Housing Agency with industry representatives will provide information and advisory service on home values to prospective home buyers.

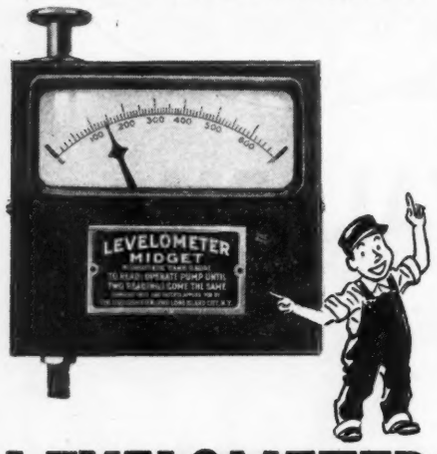
Immediately following the announcement of plans to discontinue controls and the program outlined above, L. C. Hart, president of the Producers' Council, a national organization of manufacturers of building materials and equipment, attacked the program on two counts.

"First," Mr. Hart said, "OPA must adopt a realistic policy toward the pricing of building products, and second, the construction industry must be given assurance that plans for controlling prices of new homes will be abandoned. Mr. Snyder's statement that prices of building products will be "strengthened" carries disturbing implications, in view of the fact that ceiling prices on some key building products now are so low that production is curtailed and millions of dollars worth of building is being delayed.

"Some manufacturers who changed over to war production face extensive reconversion problems which must be solved before they can attain all-out production of their peacetime lines," Mr. Hart continued. "Manufacturers of plumbing brass estimate they will need two to three months, starting from the end of hostilities, and hardware manufacturers will require two to four months. Three to four months is needed to restore all-out production of warm air furnaces, boilers, radiators, and heating specialties, and five to seven months for some household appliances, including mechanical refrigerators and electric ranges."

Attacks on price control were countered immediately by Chester Bowles, price administrator, who praised the Snyder program and announced that a bill would be introduced in Congress "in the very near future" to give authority to limitations on building costs.

A GOOD GAUGE COMPLETES A GOOD INSTALLATION



LEVELOMETER
Tank Gauges
"THEY'RE ALWAYS DEPENDABLE"

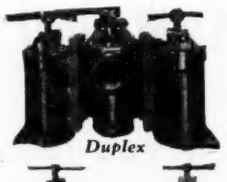
"LIQUIDS WORTH STORING ARE WORTH MEASURING"

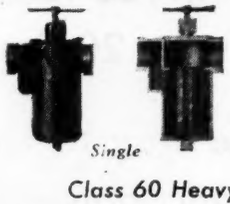
THE LIQUIDOMETER CORP.
36-19 SKILLMAN AVE., LONG ISLAND CITY, N.Y.

KRAISSL
FILTERS
STRAINERS
PUMPS
Keep Fuel Oil Lines Open and Active

Year-in, year-out performance proves the skill of KRAISSL engineering design and the honesty of KRAISSL manufacture.

Class 72 Strainers and Filters

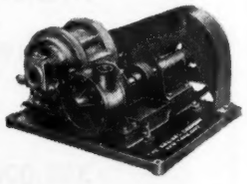




Single and Duplex types for suction or discharge service — any practical degree of filtration in units designed for low pressures as well as up to 500 lbs. hydrostatic test—easily removable filter basket insures quick cleaning.

Class 60 Heavy Oil Pumps

Standard equipment wherever independent pump and motor sets or booster pumps for pump-type burners are required.

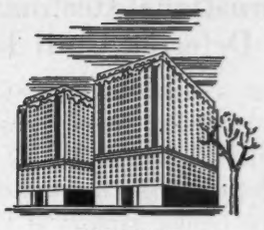


Submit your fuel-line problems to KRAISSL engineers—literature and prices on request.

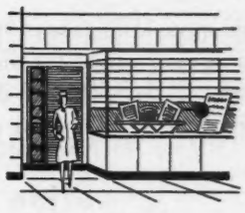
KRAISSL THE KRAISSL COMPANY
HACKENSACK, N. J.

How to GET THE MOST FROM HOT WATER!

HOMES


APARTMENTS

FACTORIES


STORES

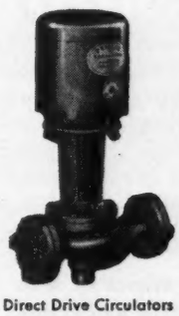
Triplex HEATING

...is the answer! For the advanced design and precision construction of Triplex Flow Control Units assure the most efficient, dependable operation of any hot water system—whether it's in Canada or Florida. This means healthful, unvarying, controlled heat, lower installation costs, lower fuel costs, and abundant domestic hot water for your customers. It means satisfied buyers, enthusiastic free advertising, increased sales and profits for you. So don't delay. Investigate now and be ready to get the *most* from hot water—the Triplex way!

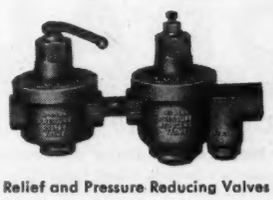
★ ***In addition to units illustrated, the Triplex line includes—Pressure Tanks • Pressure Regulators • Pressure and Temperature Relief Valves • Indirect Heaters • Temperature Regulating Domestic Water Valves • Barometric Stack Controls • Electrical Controls • Sump Pumps.***

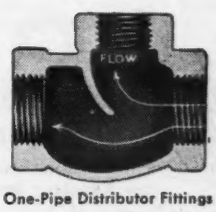
DISTRIBUTED THROUGH RECOGNIZED WHOLESALERS

Triplex HEATING
SPECIALTY CO.
PERU, INDIANA


Direct Drive Circulators

Flow-Control Valves


Relief and Pressure Reducing Valves



One-Pipe Distributor Fittings

fuelail oil heat

International Heating Show Deferred Until Jan. 1947

THE EIGHTH INTERNATIONAL Heating & Ventilating Exposition, sponsored by the American Society of Heating & Ventilating Engineers, and announced last month for this coming January at Philadelphia, has now been postponed until January 1947.

While quite a number of manufacturers sent in reservations for display space, a good many others said the date was too early for them to have their new models ready, and they preferred not to exhibit equipment that would quickly be obsolete.

Cancelling of the Heating Show means that there is almost sure to be an oilburner show, since several burner manufacturers have told Oil Heat Institute that they want a show this winter.

Plan to Close 'Inch' Pipelines

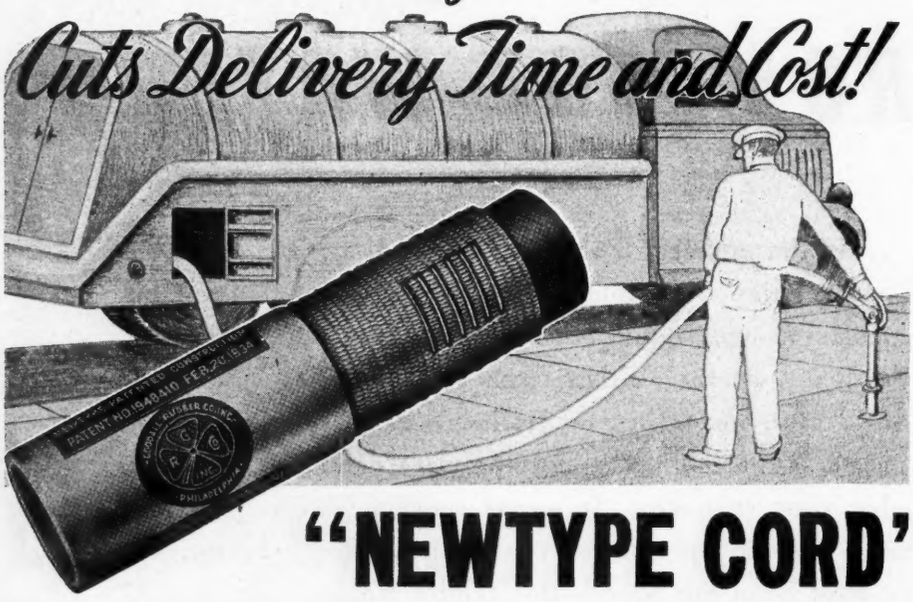
CURRENT PLANS CALL for the closing of the "Big Inch" and "Little Inch" government-owned pipelines early in October, since the return of sufficient tank ships to the East Coast run has made their use unnecessary. Eventual disposition of the lines still is bound up in politics, and no clear indication of the probable sale, lease or use is apparent.

It is reported that purchase of crude oil in West and Southwest Texas for the Big Inch line has already ceased, and purchase of products for Little Inch will be stopped when eastern gasoline supplies are secured. Spreading strikes in the refining industry may make purchases in sufficient volume to operate the line impossible. It is expected that the Little Inch line will be closed about October 1, and the 24-inch line will close shortly afterward.

Plans call for clearing the lines with water which will be treated to reduce corrosion, and then blowing them out and leaving them empty.

Non-Flattening Construction

Cuts Delivery Time and Cost!



"NEWTYPE CORD"

Kinkproof SYNPLASTIC FUEL OIL HOSE

Fuel oil deliveries are quicker . . . *and more profitable* . . . when your trucks are equipped with "Newtype Cord" hose. Patented reinforced construction, incorporating an oil-proof "Synplastic" tube, assures a maximum inside diameter at all times, even when hose is partially reeled or carried around sharp bends. Result . . . a faster flow from truck to tank; less time for each delivery; *more deliveries* per truck per day.

"Newtype Cord" is light in weight, extremely flexible, easy to handle. Available in all standard sizes and required lengths.

Contact Our Nearest Branch or Main Office for Further Details and Prices.

GOODALL RUBBER COMPANY INCORPORATED

WE ARE PARTICIPANTS IN THE OWNERSHIP AND OPERATION OF NATIONAL SYNTHETIC RUBBER CORPORATION

THE GOODALL-WHITEHEAD COMPANIES

Philadelphia • Trenton • New York • Chicago • Pittsburgh • Boston
Los Angeles • San Francisco • Seattle • Salt Lake City • Houston

Factory—Trenton, N. J. Established 1870

Constant Level Valves

(*Continued from page 43*)

above the normal oil level and would overflow into the top of the float, causing it to sink and close the upper or safety valve, shutting off the oil flow into the control. In order to reset the control it is necessary to remove this over-flowed oil from the float.

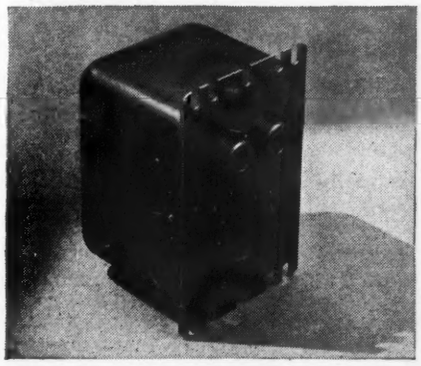
Adjustments— Refer to the control shown in Figure #4. The pilot fire adjustment is made by first disconnecting the thermostat operating rod by holding down the pilot adjusting nut and pulling up the operating rod, which has a snap ball joint on the end. Then loosen the pilot adjustment set screw and turn the pilot adjusting nut.

For the high fire adjustment, the operating rod should again be connected. The high fire adjustment is made by changing the position of the hinge pin arm, which is located on the outside of the control body. This changes the level of the oil in the control body, through the medium of the eccentric hinge pin. Increasing or decreasing the head of oil in the control body in turn increases or decreases the amount of oil flowing through the metering orifice to the operating valve tube. If both the pilot fire and the high fire are to be calibrated on this control, the high fire must always be calibrated first.

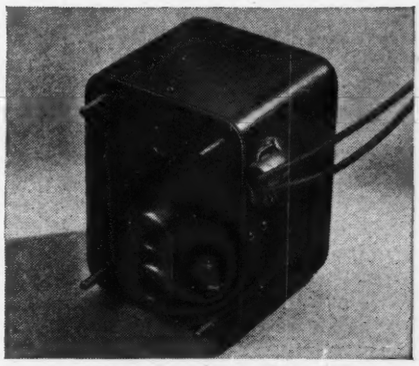
(*Continued on page 86*)

Here's help in *reducing*

RADIO INTERFERENCE

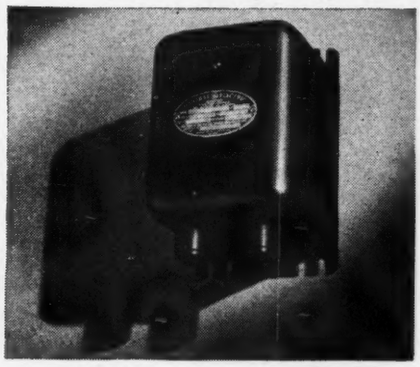


Universal mounting, h-v detachable plug terminals in bottom; l-v knockout in bottom



Studs for concealed mounting, h-v detachable plug terminals in bottom; l-v BX connector

Universal mounting, h-v stud terminals in end; l-v knockout in bottom



Universal mounting, h-v conduit, detachable plug terminals in end; l-v knockout in top

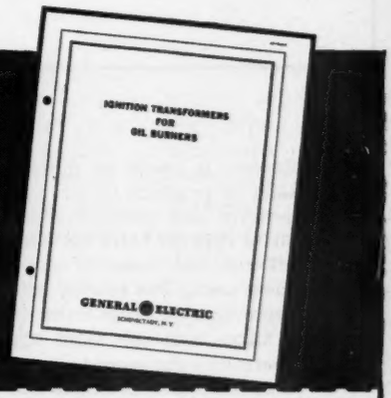
Special shielding in G-E ignition transformers virtually eliminates the problem of radio noise

These radio-interference-proof transformers (Class E) employ a special shielding which provides a freedom from noise, over all radio wave bands, that has heretofore been unattainable. The Class E design (electrostatically balanced) has the midpoint of its high-voltage winding grounded. The shield, which is also grounded, is incorporated between the high- and low-voltage windings.

Remember, too, that G-E ignition transformers provide an *unfailing* high-voltage arc—even igniting heavy oil at freezing temperatures as low as minus 10 C when the line voltage is only 70 per cent normal. They also deliver ample current to overcome such conditions as cold spark points, and oil film on these points. In addition, note the wide choice of mechanical features (at left) for easy mounting and installation.

Get your ANSWER BOOK on Ignition Transformers

Contains helpful hints on oil-burner maintenance



- ★ Suggestions for eliminating radio interference
- ★ How to eliminate destructive high-voltage surges from oil burners
- ★ How to balance high-voltage circuits
- ★ Recommended air velocities and electrode spacings for various transformer ratings
- ★ Conditions to avoid to assure proper transformer and oil-burner operation

General Electric Company,
Apparatus Dept., Sec. B403-84
Schenectady 5, N. Y.

Please send me a copy of your application booklet (GET-1004) on ignition transformers for oil burners.

Name.....

Company.....

Address.....

.....

5205

GENERAL ELECTRIC

fuel oil heat

Refer now to the control shown in Figure #5. The pilot fire adjustment is made the same as on the previous control. A wire ratchet retainer is used instead of a set screw, and the operating valve does not have a stop pin. The high fire adjustment is shown in detail in Figure #6.

Remove the cap nut (A), release the lock-nut (C), and turn the slotted screw (B) which moves the needle point (F) in or out, resulting in increasing or decreasing the amount of oil flowing through the jet (Z). (In some cases, the lock-nut (C) will not be found in the assembly. Sufficient friction has been provided in the thread to hold it in position).

Multiple Stage Operation

The Lochinvar water-heater thermostat is not snap-acting. It is a sensitive, immersion type bimetal, which reacts to slight temperature changes. The thermostat arm is connected to the operating rod, which in turn is connected to the operating valve. When the thermostat is satisfied, the operating valve is in the pilot position. If a small amount of hot water is drawn off, the thermostat will react to lift the operating valve slightly off the seat. If a considerable amount of water is drawn off, the thermostat will react to lift the operating valve completely off the seat, which will then allow the full high fire flow rate to enter the burner. In other words, if the unit were started up when the water in the storage tank was stone cold, the thermostat would raise the operating valve completely off its seat, and the burner would then be operating with a full high fire. As the temperature of the water increased, the thermostat would gradually lower the position of the operating valve, through an infinite number of intermediate stages, until the water came up to temperature, at which point the thermostat would be satisfied, the operating valve would be in its downward position against the pilot stop and the burner would be on pilot fire. Consequently, the flow of oil into the burner can be anywhere from the pilot or minimum flow rate, through a variable intermediate flow, to the full high fire or maximum flow rate, depending on the position

(*Continued on page 90*)

Render Service that Promotes Good Will

Success is based on quick, easy sales of products or services that perform and promote good will. **SILOO FUEL OIL TANK SOLVENT** does all this *and more.* It cuts down those costly free service calls that cause so many profit leaks.

SILOO FUEL OIL TANK SOLVENT overcomes the everyday problems common to proper combustion and storage of fuel oils, without affecting the characteristics of any fuel.

It is a safe antidote for clogged pipe lines, oil strainers, oil filters, burners.

It assures trouble-free heater, boiler, turbine and engine operation.

It is non-explosive, non-inflammable, non-corrosive and non-toxic.

It dissolves sludge accumulation in tank and fuel system.

It will remove polymerized gums and act as an inhibitor against electrolysis.

It is a product of fifteen years standing.

It is nationally advertised in twenty magazines.

Get the **SILOO** story today!

PETROLEUM SOLVENTS CORPORATION

Solvents for all types of petroleum residues

331 Madison Avenue, New York 17, N. Y.

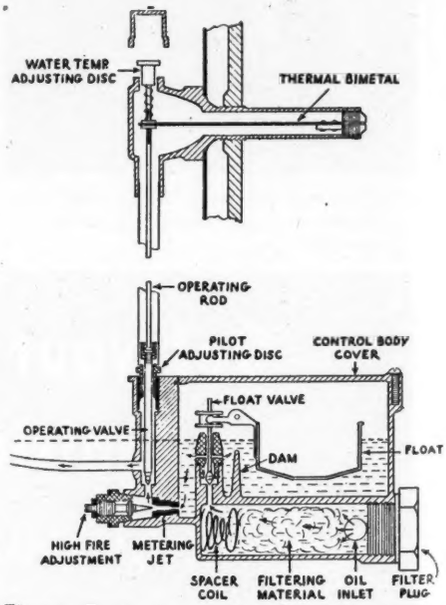


Figure 5. *Lochinvar Corp. water heater control (old model).*

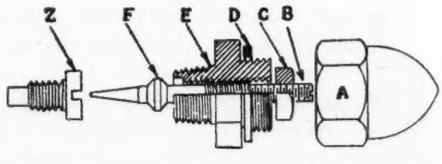
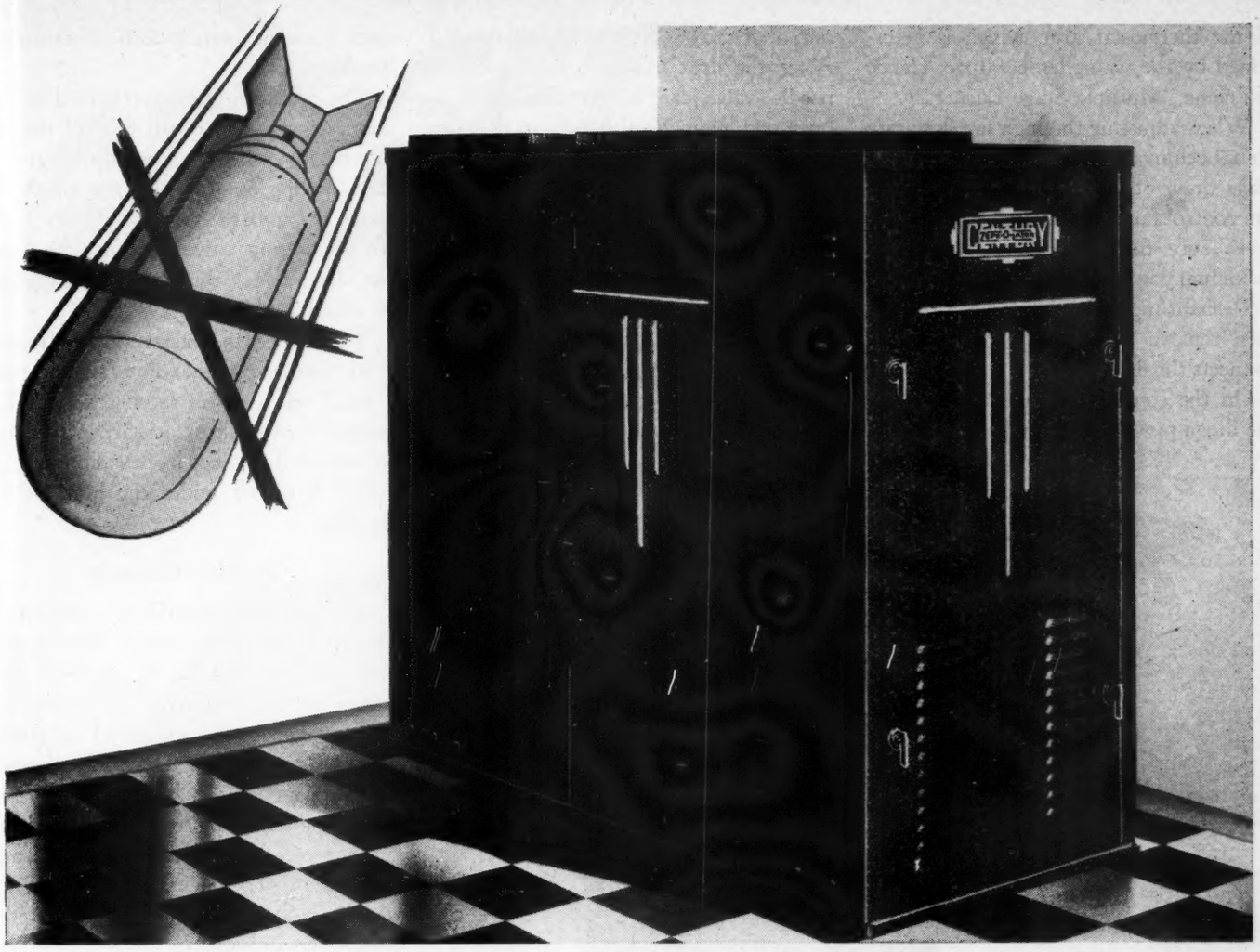


Figure 6. *High fire adjustment for control shown in Fig. 5.*



New CENTURY Equipment is on the way!

At the beginning of the war the Century Engineering Corporation made a 100% conversion and became one of the leading manufacturers of bomb fuzes and other ordnance equipment. Anticipating the day of victory, plans were made for new and improved heating equipment for your profit, and today Century is again manufacturing fine oil-fired heating equipment. The demand created through the four years of war is tremendous and it is impossible to take care of it in a period of three or four months. The immediate situation still remains critical, therefore many deliveries will not be made for sometime. However, Century is now producing a limited number of conversion burners and as vital materials are released and the production capacity expands, more will be on the way. Through this magazine Century will keep you informed of the production and release of the fine oil-fired heating equipment that will bring you new and greater sales opportunities.

ARMY E NAVY

Employees of the Century Engineering Corporation, Ordnance Division, have for the third consecutive year been awarded the coveted ARMY-NAVY "E" award for excellence in war production.

CENTURY ENGINEERING CORP.

CEDAR RAPIDS, IOWA

OIL BURNERS • BOILER-BURNER UNITS • WARM AIR FURNACES
HUMIDIFIERS • WATER HEATERS • AIR CONDITIONING

of the thermostat arm, which is determined by the water temperature. Hence the name "Multiple Stage Burner."

When adjusting the high fire flow rate on a Lochinvar water heater C.L.V., always draw off sufficient water to bring the control on to a full high fire flow, to make sure the adjustment is the true maximum you wish to arrive at.

Dismantling—Take off the control top, then remove the hinge pin, which disconnects the float.

On the control shown in Figure #4, the hinge pin is purposely bent and must not, under any condition, be straightened. After the float has been taken out the needle valve can be removed with an open-end wrench, although it is rather difficult because of the narrowness of the control body at this point. It can be easily removed with a special wrench somewhat like a spark-plug wrench, which fits over the entire valve assembly and extends above the top of the control body, where it can be easily turned. Because of the small orifice in the inlet valve port, the lower inlet valve seat should also be removed and cleaned. It can be removed with a socket-wrench with an extension handle.

The operating valve is removed by disconnecting the snap ball joint of the operating rod at the pilot adjusting nut, then pulling out the stop pin which extends through the operating valve tube. The operating valve can then be lifted out, after which the metering orifice can be cleaned.

To remove the metering jet (Figure #6), unscrew the hex nut (E) and with a small screw driver loosen the jet (Z), using a toothpick or a sharpened match to remove it. Do not lose the fibre washer which is placed under the head of the jet (Z).

Cleaning Controls

The Strainer should be washed in clean fueloil. If it is coated with a wax accumulation, this can be removed with hot water; but be sure to dry thoroughly. When the filtering material is lambs' wool, rinse it in clean fueloil, and when replacing put it back as loose as possible. The Strainer should not be replaced until the entire control has been cleaned, and then see that the Strainer Chamber is cleaned and that the Strainer Gasket is in good condition.

The Inlet Needle Valve can be wiped off with a clean rag but be sure any loose lint is removed before replacing.

The Inlet Seat should be cleaned with a sharpened stick, much the same as a meat-skewer or a taffy-stick.

The Inlet Port should be cleaned with a smaller diameter stick which will extend through into the strainer chamber.

The Meter Stem Slot should be cleaned with an old toothbrush or with a stiff piece of paper, or cardboard. Be sure the air vent through the center of the metering stem is open.

The Metering Stem Seat should be cleaned with a sharpened stick, and the Metering Stem outlet Port should be cleaned with a smaller diameter stick.

Pour a little fueloil through both valve seats to wash out loosened foreign matter.

The Metering Orifice or Metering Jet (Lochinvar C.L.V. only) should be cleaned with a tooth-pick.

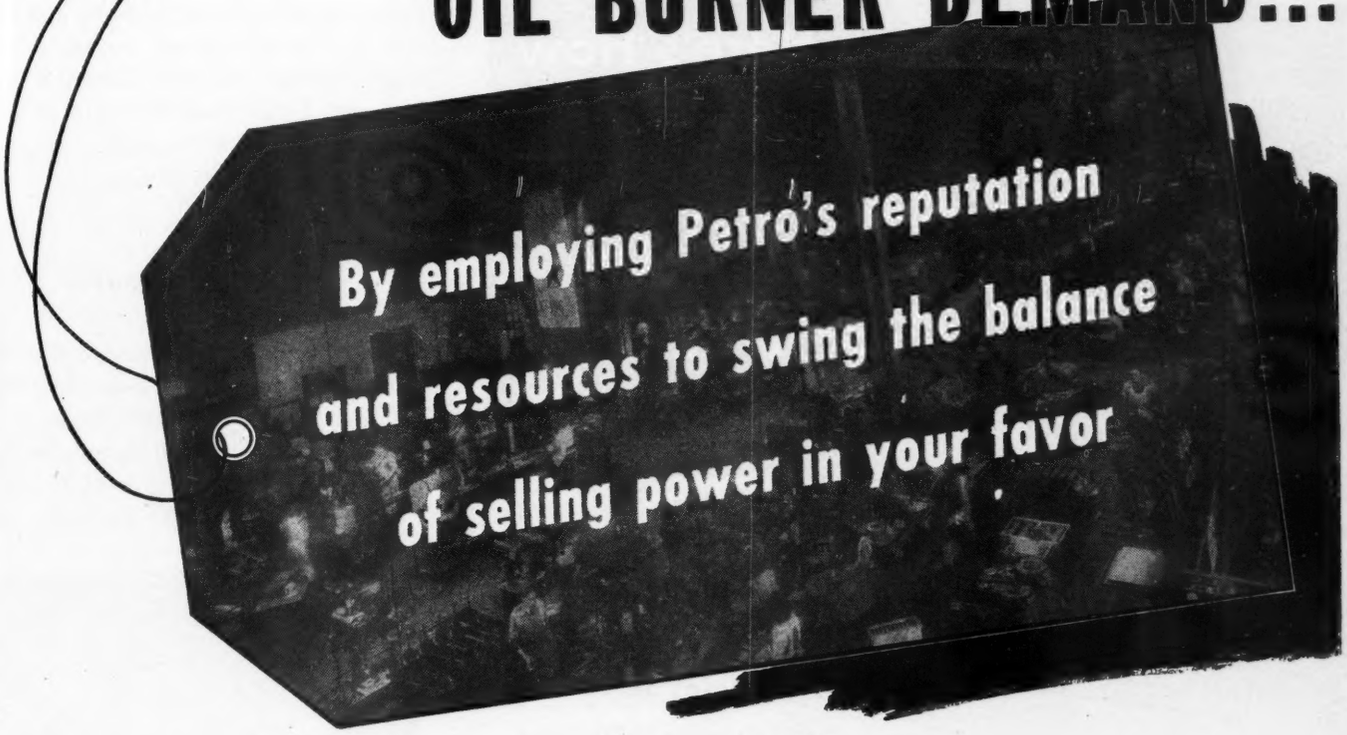
If the Control Body has a heavy accumulation of wax, the bottom part of the control containing the Constant Level Valve mechanism only should be removed and dismantled. Make sure there are no

AVAILABLE Now Shipments FROM STOCK!
WIRE US YOUR ORDER!
We can now make immediate shipment of Dongan Ignition Transformers for repair and replacement purposes. Write us concerning your requirements.
DONGAN ELECTRIC MFG. CO.
2981 Franklin Detroit 7, Mich.
The Dongan Line Since Nineteen-Nine
WRITE FOR LITERATURE
DONGAN TRANSFORMERS

GET SET

FOR GREATER

OIL BURNER DEMAND...



RIVALRY WILL BE KEEN. In the brisk contest ahead, it will be the *plus* values and *extra* sales features that, in the long run, will identify the oil burners with the competitive selling edge.

In your search for extra selling power, Petro's reputation and resources are sales features that cannot be over-emphasized. Behind the Petro name are 40 years of pre-eminent oil burner achievement reflecting the leadership and progressiveness of the world's oldest and largest organization devoted exclusively to oil heating!

Petro's New oil burners — including certain other important new Petro developments — will be available through established heating wholesalers.

PETROLEUM HEAT AND POWER COMPANY • Stamford, Conn.

Petro Fuel Oil bulk plants, distributing terminals and facilities in: Mt. Vernon • Newark • New York
Baltimore • Stamford • Boston • Long Island • Washington • Providence • Philadelphia • Chicago

OHI

PETRO

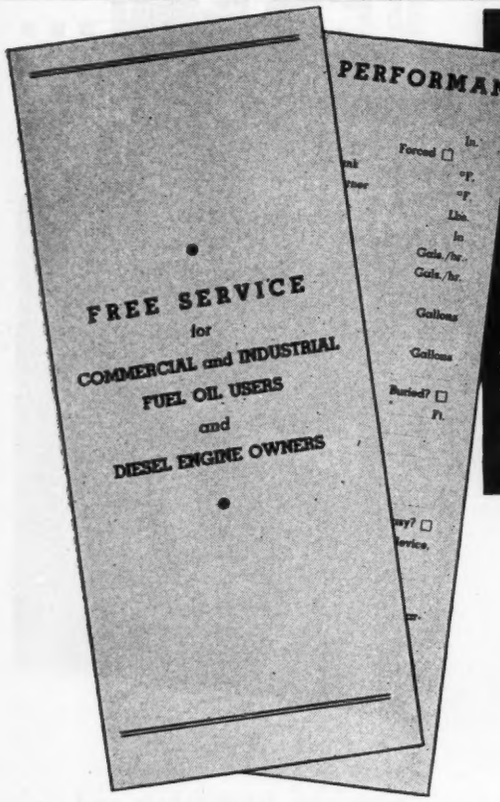
MAKERS OF
GOOD OIL BURNING
EQUIPMENT SINCE 1903

gaskets left anywhere in the Control Body. Twist a piece of wire around the mounting bracket and place the entire Control Body in a bucket of boiling water. When the wax has been dissolved and the control has been removed, the heat of the metal will evaporate any excess water. The component parts can also be strung on a wire and cleaned the same way, providing the gaskets have first been removed.

There are many variations to some of the above controls, particularly on furnace models, too numerous to explain in an article of this type. For more minute details, contact the manufacturers for the excellent manuals and bulletins they have available to the industry.

Constant Level Valves are finely built pieces of mechanical precision. Both the inlet needle valve and the metering stem valve operate immersed in fueloil. The action of the float assembly on the inlet needle valve is so gentle that even after years of operation the wear on this part is almost immeasurable. The only time any real pressure is exerted on the inlet needle is when the safety trip mechanism operates to throw the control off on safety.

The metering stem operates in a sleeve, which of course means minimum wear, as the action is a sliding one. The stem never really closes completely on the seat, except when controls which have a manual selector knob are turned to the "off" position, or on those few makes of vaporizing burners using electric ignition. The slight wear present on the entire metering assembly, including the actuating mechanism, after years of operation, can easily be compensated for by a slight turn of the adjusting screws. Handle them carefully and service them properly, and you will find, as our service records prove, that Constant Level Float Control Valves have the lowest mortality rate of any mechanical piece of equipment encountered in oilburner service work.



Here's How You Can *Open the Door* to NEW FUEL OIL ACCOUNTS

New Oil Burner and Diesel Engine DIAGNOSIS CHART Helps Solve Oil Burner Problems

Oil dealers—we now offer to YOUR commercial and industrial customers and prospects a new FREE advisory service designed to help them keep their oil burner systems operating at peak performance.

Our combustion engineers have developed a new Diagnosis Chart, which, when properly filled out will permit us to analyze an oil burner system and make INDIVIDUAL recommendations which will help overcome their troubles. This service we will perform absolutely FREE—there's no strings attached to it except that it is NOT available for domestic fuel oil use.

How YOU benefit by this Offer!

We want this service to originate with you, the oil dealers. Charts will be supplied which you may distribute among your customers and prospects. After we have received them properly filled out, our combustion engineers will make their analysis and the individual recommendations will be returned to you. You in turn will be rendering an invaluable service by passing our suggestions along. By this method it will be possible to not only reduce the number of free service calls that you must make each year but to also develop new business and establish year-round customers. Write today for the profit-making facts.

COMBUSTION UTILITIES CORPORATION

Manufacturers of **KLEEN-FLO** *Fuel Oil Conditioner*

1451 Broadway, New York 18, N. Y.
Los Angeles Office: Suite 1119—742 South Hill Street

Thermostat Trouble

(*Continued from page 50*)

which were found to overheat, and to obtain more heat from the radiators which received little or insufficient steam.

The dealer then found that the burner could be controlled equally well by room thermostat A or B (in the drawing); during the same kind of outside weather, both thermostats gave on-off recorder charts practically identical. It was also concluded that now the heating plant

Inexpensive room recorder is useful in checking bumpy heating.

A Triple-strength SELLING PROPOSITION for APPLIANCE DEALERS

There's a tremendous water heater market ready and waiting.

And there'll be plenty of profit in it for dealers who handle Ruud Automatic Gas Water Heaters with Monel* Tanks.

The day is not far off when you'll have this triple-strength line to offer your customers.

Here are the "BIG 3"

When you handle Ruud, you're not taking on just another water heater. You're merchandising *perfect hot water service*, the kind of service customers *expect*. And here are the reasons this is a *triple-strength* sales proposition.

1. **RUUD,** manufacturers of water heaters since 1889, is a recognized leader in the field.
2. **GAS,** the convenient, dependable, economical fuel which many of your customers and prospects have long used.
3. **MONEL,** the rustproof nickel alloy. Water always comes out as clean as it goes in. Monel tanks are long-lasting and trouble-free. They reduce service and maintenance problems.

Get set to meet any competition

A profitable postwar business can be yours. *Be a Ruud-Monel Dealer.* A complete line of improved water heaters for all household and many commercial uses now in production.

You'll have powerful national advertising to support you . . . and a lot of additional sales helps, too.

Selling days are ahead. But planning days are *now.* Send the coupon for details of one of the most profitable dealerships in the water heater field. And do it *today* . . . while a few towns remain without dealerships.

*Reg. U. S. Pat. Off.

RUUD MANUFACTURING COMPANY
PITTSBURGH 1, PA.

RUUD GAS MONEL . . . perfect partners for *Automatic Hot Water Service*

Fuelfoil & oil heat

H_2O HOT STUFF

George Westinghouse was an inventor of gas equipment before he turned to electricity. And one of his right-hand engineers in those days was Edwin Ruud, inventor of the Ruud Automatic Gas Water Heater.

★ ★ ★

Thirty-four years later, there was another Ruud-Westinghouse tie-up when Westinghouse used one of the first of all commercial programs on the air—the Ruud Light Opera Hour—in its first experiments with shortwave broadcasting between Pittsburgh, Pa. (KDKA), and Springfield, Mass. (WBZ).

★ ★ ★

The Ruud-Monel Automatic Gas Water Heater is a germ-chaser, a body-freshener, a fatigue-chaser, an emergency first-aider and a budget befriender.

★ ★ ★

Some day it can be told—ALL the wonderful ways Monel is serving in the war. War-time performance is the best guarantee of peacetime satisfaction. Sell a Ruud-Monel and you make a friend.

★ ★ ★

The new Ruud Multi-tube Automatic Gas Water Heater is now in production. Nineteen sizes are made to serve many commercial and industrial requirements. Write for a catalog.

SELL AN ESTABLISHED, ACCEPTED WATER HEATER

RUUD MANUFACTURING COMPANY
2934 Smallman Street, Pittsburgh 1, Pa.

I'm interested in selling the Ruud-Monel line in my community. Please send me full information.

Name.....

Company.....

Address.....

City.....*Zone*.....*State*.....

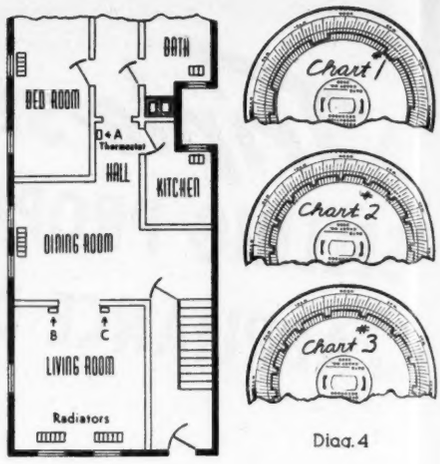
F.O. & F.O.H.-10-45

could be controlled satisfactorily by the special system for large building heat control, which previously had failed to give satisfaction simply because the flow of steam to the one-pipe and two-pipe radiators was not balanced.

Diag. 4 has to do with thermostat location troubles, pure and simple. The floor plan is of the first floor of a three-family house. As this floor was occupied by the owner, the thermostat was installed here, at the indicated point A.

On-off recorder Chart #1 was made after the landlord reported that his two tenants complained of lack of heat no matter how high he set the thermostat in his apartment. The cause of their complaints was long "off" periods, as this chart shows.

The burner dealer recognized this from the chart, but first tried the wrong way to get shorter "on" and "off" periods. He removed the regular heater element from the room thermostat, because even with the thermostat set for maximum sensitivity it did not give short enough "on" periods, and substituted a heater element not made for the particular thermostat and burner relay, but which became very warm. Chart #2 was the result. The "on"

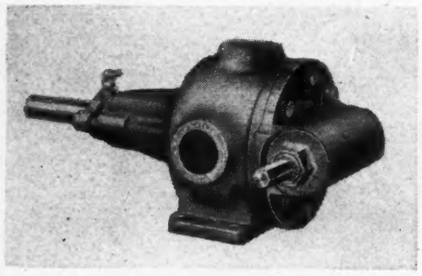


Diag. 4

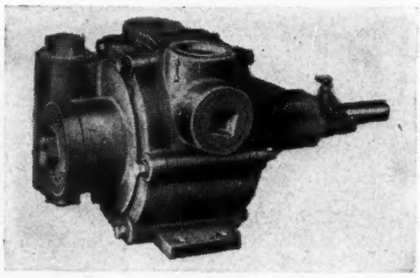
periods are as short as the dealer desired. But a new trouble arose, for in the hall, at location A, the temperature stayed steady during very cold weather, while the temperature dropped in the rest of the apartment, and in the tenants' apartments. Clearly, the room thermostat with the extra-hot heater element was acting as a timer only. Dropping the room temperature did not affect the instrument greatly. The thermostat was turning off the oilburner only because the heater element in it was making the contacts open —not because of an increase in the temperature of the hall.

To check on this, the burner was kept idle for four hours during cold weather. The temperature in the living room dropped seven degrees, but the temperature in the hall, at point A, dropped only two degrees. Next, the oilburner was operated steadily for 90 minutes. The living room temperature rose 12 degrees, but the temperature at point A rose less than four degrees. Location A was judged to be a poor thermostat location because it was in an inside hall with no radiation and no exposed, outside walls. This location, moreover, is blanketed by the kitchen which receives heat from the cookstove, and by the bath room which receives noticeable amounts of heat from the chimney. The bath room, kitchen, and bed room shown in the diagram have relatively small radiators for their heat losses, compared to the dining room and living room. All these factors combine to give location A a steadiness of temperature which makes it unsuitable for a thermostat location.

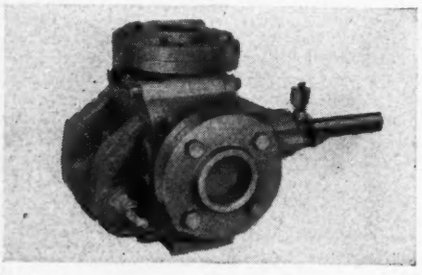
Either B or C could be used as good thermostat locations, it was concluded after a study of the apartment—if there is a preference, it would be in favor of



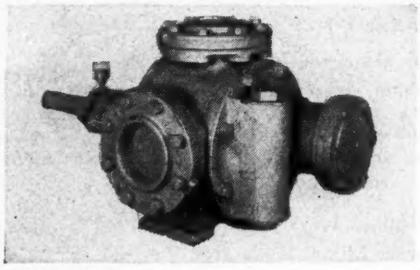
Model 40 AT — 1½"–40 GPM, complete with by-pass type head, solid head optional.



Model 80 BT — 2"–80 GPM, complete with variable control type head, solid or by-pass type head optional.



Model 100 CT — 3"–100 GPM, complete with by-pass type head, solid or variable control type head optional.



Model 200 AT—4"–200 GPM, complete with variable control head, solid or by-pass type head optional.

Now Available

TRI-ROTOR TRUCK PUMPS

TRI-ROTOR Truck Pumps are the only modern low pressure pumps that have the high volumetric efficiency of a rotary pump plus the positive handling characteristics of a piston pump. They operate without overheating, chewing, foaming, or agitating the product. Sizes: 5 GPM — 200 GPM.

Only three moving parts assure minimum maintenance — low operating cost.

Three head styles are available: Solid, By-pass and Variable Volume Head, covering all types of truck pump installations.

Please wire or mail your requirements to Pump Division. AA-5 priority is required, highest rating given preference. The Yale & Towne Manufacturing Company, 213 Henry Street, Stamford, Conn. Representatives in major cities.

MAKERS OF THE FAMOUS YALE LINE OF LOCKS, HARDWARE, HOISTS AND INDUSTRIAL TRUCKS

TRADE YALE MARK

EXPLOSION PREVENTER

New - - more efficient - - now available

Oil burner explosions spring from flame failure inadequately monitored. Ordinary controls wait for temperature changes — give the combustion chamber time to become charged with dangerous gases which may wreak havoc. Fireye Photoelectric Flame Safeguard, however, watches the flame itself — shuts down the burner when that flame fails. The new Fireye F-18-E brings to commercial and industrial burners the latest postwar engineering features. A built-in time-delay overlooks flame flicker, eliminates needless alarms and false shutdowns — yet remains well within the few seconds of absolute safety. A new lens system gives added cleaning convenience and more efficient operation. A pilot light indicates safety shutdown at a glance. Low water cut-off equipment — electronic and floatless — may be added at any time. From every angle this new streamlined Fireye is the flame safeguard of tomorrow — proved and ready today.

F-5

Combustion Control Corporation • **Cambridge 42, Mass.**

District Offices in all Principal Cities

photoelectric fireye flame safeguard

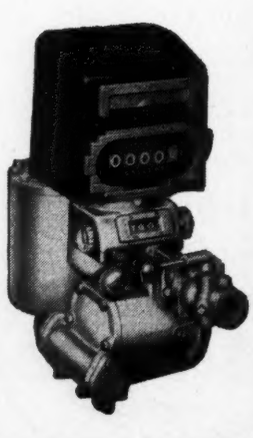
using location B. The thermostat was installed at B. Chart 3 was obtained using the regular heater element in the thermostat, and the adjustment for maximum sensitivity. Notice that the "off" periods are of different lengths of time in Chart #3, indicative of the oilburner's giving different amounts of heat at different times of the day. Whereas in Chart #2, the "off" periods are all of almost equal length of time (the "on" periods also). Actually when Chart #2 was made, it was warmer in the middle of the day than in the early morning and the evening.

One of the conclusions that comes from a study of Diag. 4 is that while the room thermostat should not be too close to a radiator or an outside wall, also it should not be too far away from radiators or outside walls, or located where the temperatures of these affect it insufficiently.

The man who selects the locations of the room thermostats that control the oilburners installed by your company needs as positive a manner as is used by a radio announcer, for when he has decided where the thermostat should be installed for proper heating, he has to announce this to the home owner in no uncertain terms.

Here's how more deliveries per day at lower cost can be attained! (1) The driver can pre-set the exact amount of oil to be delivered, (2) leave the truck and attend to the delivery himself at a distance of many yards. The delivery is measured and controlled directly on the truck meter and (3) the ticket printer provides a printed record of the transaction for both the customer and home office. Contact the nearest office and a Smith Meter Company representative will furnish complete information.

Illustrated, H-3Z Meter equipped with automatic set-stop, large numeral counter and ticket printer.



SMITH METER COMPANY

SUBSIDIARY OF A. O. SMITH CORPORATION

Factory – 5743 Smithway, Los Angeles 22, Calif.

SALES OFFICES: NEW YORK, CHICAGO, HOUSTON, LOS ANGELES

Local Stocks at Convenient Points • Local Agents In All Principal Cities

Fueloil Truck

(Continued from page 46)

stand the vibration of solid tires and rough highways. This is no longer a necessity. To illustrate the progress that has been made in the average weight per horsepower, which figures do not take into consideration the progress made in the weight reduction of the tank and its apparatus, I submit Chart No. 9.

Engines have improved very materially as regards performance and this improvement is shown on Charts No. 10 and No. 11. Many of these factors have brought about a vast improvement in fuel consumption which is a very important consideration when we consider the fact that the fueloil delivery truck engine in the majority of instances also serves as a pumping unit to deliver the product into the customer's tank.

The average commercial motor vehicle operator with whom I have come in contact is satisfied with his job and will do a much better piece of work if he has an engine capable of performing satisfactorily day in and day out. In my opinion, "he purrs if his motor purrs." Give an

AVERAGE CHASSIS WEIGHT PER HORSEPOWER
(11 Makes and Models)

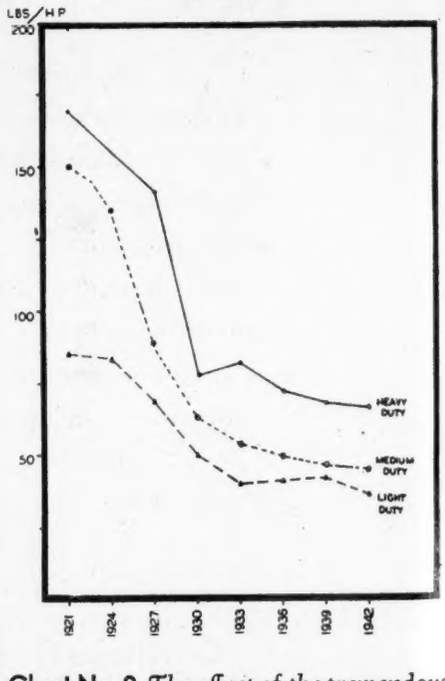


Chart No. 9. *The effect of the tremendous increase in horsepower on the performance ability of trucks is illustrated by this chart, showing averages for light, medium and heavy duty trucks, respectively, in terms of pounds of chassis weight for each horsepower.*

ANOTHER FAMOUS AMERICAN INDUSTRY

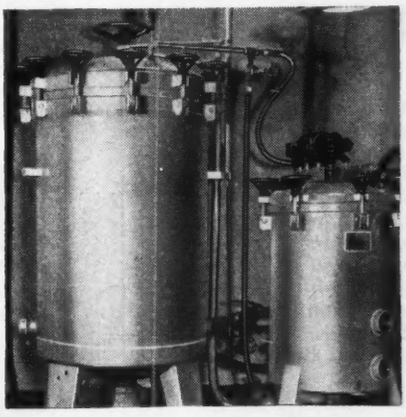
That Uses Bowser EXACT Liquid Control

ON THE JOB... for more than 26,000 Hours! That's the Performance Record of BOWSER Filtering Equipment at the Famed **ANHEUSER-BUSCH BREWERY**

The Bowser Filter in the Anheuser-Busch Brewery in St. Louis pictured here has been operating day and night . . . seven days a week . . . for three full years . . . a total of over *26,000 hours!*

This is typical of Bowser performance not only in the brewing industry but also in every other industry of importance throughout the Nation.

Two things you can count on . . . the clarity of beer that's Bowser-filtered . . . and the unfailing performance of Bowser Beer Filters and Bowser Meters. For years, Bowser Beer Meters have been approved by the U. S. Bureau of Internal Revenue for the measurement of taxable beer. In addition, more Bowser Beer Filters (diatomaceous silica type) are now in use in American breweries than all other makes of powder type filters.



BOWSER

SINCE 1885

In the petroleum products field, Bowser is likely even more widely known than in the brewing industry. Bowser meters and pumps for bulk plants and trucks have given outstanding service to large and small operators for decades.

Here's an example: A prominent operator in Providence, R. I., installed a Bowser Xacto Pack with a power take-off on one of his smaller trucks. He found that he could deliver 2400 gallons of fuel oil (at the rate of 30 gpm) with the consumption of only one quart of gasoline.

And remember—there's a complete Bowser service organization near you. For particulars write BOWSER, INC., Dept. 10-J, Fort Wayne 2, Indiana.

Not only has Bowser's war production earned the Army-Navy E . . . Bowser equipment has helped earn it for scores of other companies

THE NAME THAT MEANS **EXACT CONTROL** OF LIQUIDS

fueloil & oil heat

operator an engine that is undersize for a given load and he is sure to be dissatisfied. My experience indicates that such units run up excessive maintenance and repair costs.

CHANGE IN
HORSEPOWER PER POUND OF ENGINE WEIGHT
(4 Typical Medium Duty Engine Models)

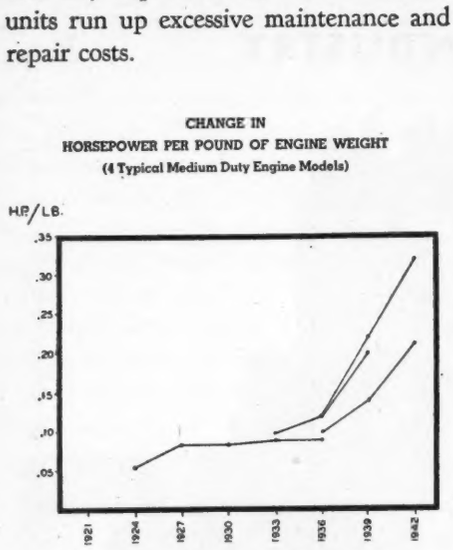


Chart No. 10. *The relationship of engine weight and engine size (piston displacement) hasn't changed much over the years. This chart shows what manufacturers did to four typical engines in the way of increasing horsepower without changing the weight of each engine materially.*

Another item that enters into this subject of satisfactory engine performance has to do with the performance of the vehicle on the highway. Small, unsuited equipment causes considerable lost time because it is not capable of accelerating rapidly in the traffic lane and if the area is hilly, the time employed to cover the territory is considerably longer than

SPECIFIC FUEL CONSUMPTION
AT MAXIMUM TORQUE
(2 Truck Engines)

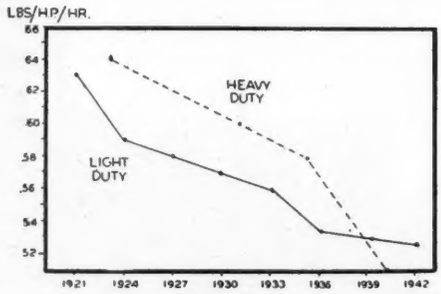


Chart No. 11. *An idea of the increased economy achieved in truck engines over the past 20 years is shown above, illustrating a drop of approximately 20% in the fuel required for each horsepower.*

INCREASE IN TORQUE
(3 Medium and Light Duty Trucks)

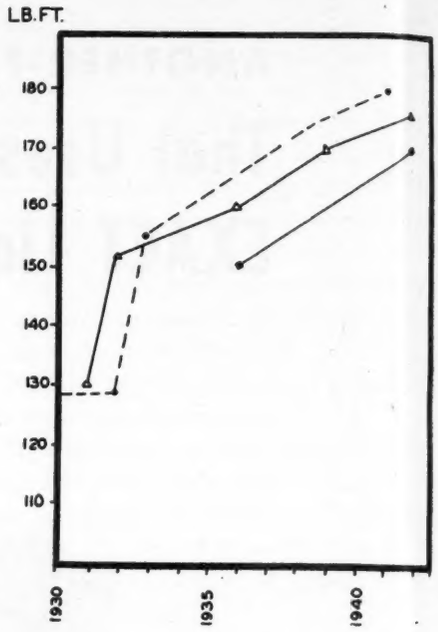
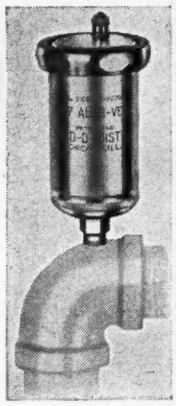


Chart No. 12. *On the basis of total amount of torque truck engine development over the past decade shows tremendous improvement in hill climbing (lugging) ability. This means higher speeds on hills.*

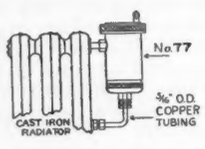
And Keep It Out With

AUTO-VENT AIR ELIMINATORS



CIRCULATION TROUBLES?

Don't fight air pockets or traps in hot or cold circulating lines! "Get that air out of there" *and keep it out* simply by installing the No. 7 Maid-O'-Mist Automatic Air Vent. This reliable air vent has a self-closing float-controlled valve and is designed especially for circulating pipe lines, convector radiators, unit heaters, cooling manifolds, tanks, diesel engines, or any other application where air pockets or traps retard the free circulation of liquids. For pressures up to 75 lbs. Bright brass finish.



Venting Cast Iron Hot Water Radiator

PLAY SAFE—USE ONE ON EVERY JOB

MAID-O'-MIST INC.

3221 NORTH PULASKI ROAD
CHICAGO 41 ILLINOIS

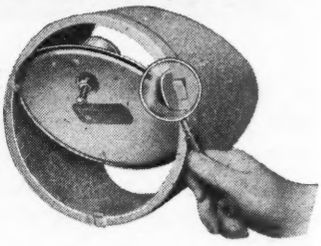
AUTOMATIC HUMIDIFIERS
FOR ALL TYPES OF HEATING SYSTEMS

CSE **BAROMETRIC DRAFT CONTROLS**

THE MARKET WILL BE EVEN LARGER AND MORE PROFITABLE THIS SEASON

DRAFT KOREKTOR
Type F909

A low-cost open check control for coal and oil burning installations. Simplified, outside draft adjustment, rust proof, positive locking and fool proof.



DRAFT KOREKTOR 906
6 inch

Low cost, highly efficient. Has close-fitting blade; knife-edge, non-clogging pivots; simplified outside draft adjustment; long tee side, or sold less tee.

Fuel-Saving Starts With CONTROL

We manufacture a COMPLETE line of draft controls for every size and type of heating plant.

Cole-Sullivan Engineering Co.

1300 No. Third St. Minneapolis 11, Minn.

would be the case if the engine was of the correct size. The general public dislikes the idea of meeting slow moving commercial vehicles, especially on a hill, and from my viewpoint such vehicles are a poor advertisement to any business and tend to cause sales resistance. We have met this problem by insisting that proper size engines with correct gear ratios are employed which will assure our units proceeding over a 3% grade at not less than 20 miles per hour. If you introduce this factor into your operation, I am certain you will be pleased with the results.

On the subject of engine performance, manufacturers have improved the torque performance of their engines. Chart No. 12 illustrates the progress made over a period of time. Here again we can anticipate an even greater improvement in the models that are about to be brought out, an improvement which can only be utilized through making certain that the compression ratio of the engine is capable of handling to the fullest economical point the new fuels being introduced on the market.

In units used for the delivery of fuel-oil, the engine has to be backed up by a combination of proper gear ratios to meet the many variable conditions that are encountered in the winter weather. Chart No. 13 illustrates the progress that has been made in possible combinations of gear ratios from which you can make

TREND IN LOW GEAR RATIO
3, 4 AND 5-SPEED TRANSMISSIONS
(Average for 7 Models)

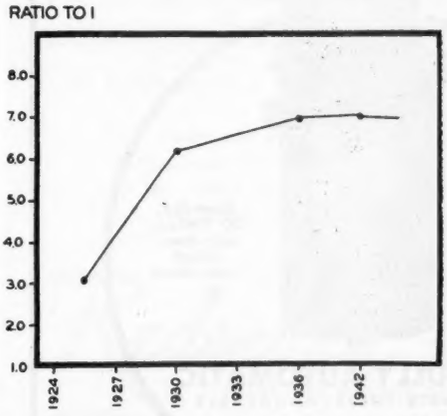
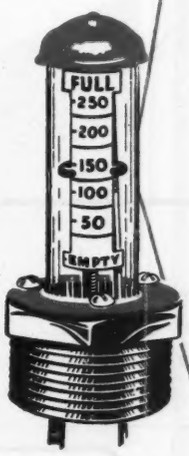


Chart No. 13. *Whereas 15 years ago low gear in trucks had a reduction ratio of around 3 to 1, the average for 3, 4 and 5 speed transmissions today is close to 7 to 1, an indication of the increased power available at lower road speeds.*

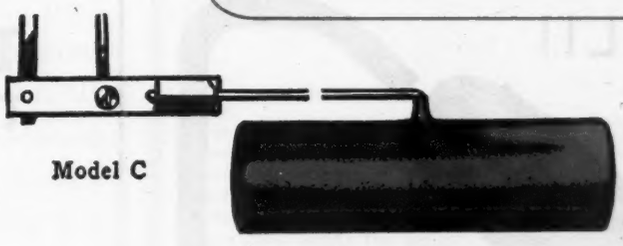
MEL FUEL-OIL GAUGES

NOW AVAILABLE FOR

IMMEDIATE DELIVERY



- New, Low Prices Established
- Quantity Deliveries Unlimited
- Service Parts Free for One Year



Model C

Patented MEL-GAUGES not only sell themselves but help sell installations. Their readily apparent expert workmanship and beauty is appreciated by all who see them. The exclusive *adjustable* feature tends to increase sales and promote customer goodwill.

MEL *adjustable* fuel-oil gauges are manufactured in two models—Model C for quality installations—Model A1 for perfection plus economy. Place your orders now for a sufficient quantity of MEL-GAUGES to meet your requirements. Don't let the post-war production rush force you to accept an inferior product.

Mel-Gauge COMPANY
EAST HAVEN, CONNECTICUT

WRITE FOR FREE FOLDER

See for yourselves why the better looking, more efficient, *adjustable* MEL-GAUGE has already become a request item for fuel-oil tank installations. Compare the many specialized features of MEL-GAUGES with ordinary fuel-oil gauges.

your selection. It is highly desirable to see to it that you have the ratio in your unit that is adaptable to the type of country in which you operate.

Driver comfort is also important. It is my belief that many models that will be brought on the market will show considerable improvement in the construction of the cab as regards visibility, ventilation, possible heating facilities and the seating arrangement. If improvements are made along these lines, there is no doubt that all will be able to obtain more for the employment dollar in future.

Chart No. 14 shows the progress that has been made in gear ratios as they affect the steering gear. On Cab-Over-Engine units this factor, because of the greater load being placed on the front axle, is very important. On the other hand, high speed units also need to have careful consideration given to this factor.

Another factor that enters into ease of operation has to do with the clutch pedal pressure. Some units are difficult to operate while others are much easier on the operator. It is well to consider this point. Chart No. 15 illustrates the progress made along this line.

In selecting tires for a given chassis, one must consider the quality of tires today will not equal that of pre-war days. You must also take into consideration that for a given chassis, one can select a number of tire sizes, so you have the opportunity of overloading the tires or selecting a suitable size. For the average 1½ ton chassis about nine alternate size tires can be used. This subject of correct tire sizes is important when considering first cost and anticipated operating costs.

It is my opinion that the tires of today

STEERING GEAR RATIOS
(Three Companies)

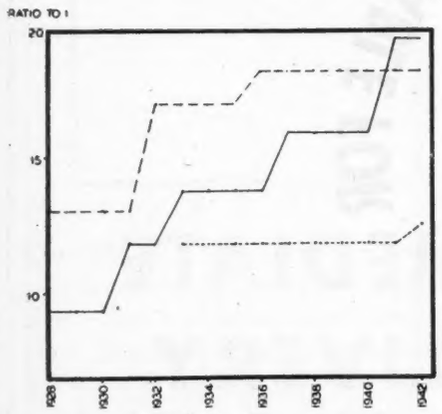


Chart No. 14. *As road speeds have increased, steering gear ratios have tended upward to make handling easier and safer.*

CLUTCH PEDAL PRESSURE
IN %
OF 1932
VALUE
(One Make)

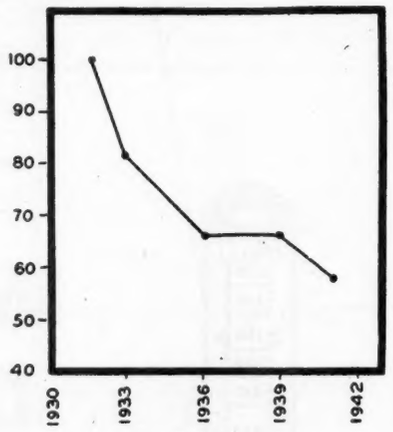


Chart No. 15. *To make driving easier, manufacturers have reduced clutch pedal pressure by almost one-half during the past ten years.*

THEY WOULDN'T CANCEL!!

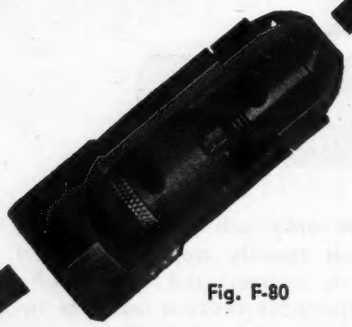


Fig. F-80

During the war Monarch nozzles were specified for so many military applications that few were available for civilian use and consequently a very large backlog of unfilled civilian orders accumulated. When the war ended all customers were urged to cancel material no longer needed but many who originally ordered for war purposes still want their material for their peacetime products, the original civilian orders still stand, and practically no cancellations have been made!

To help us get caught up, additional nozzle production facilities have been installed and the factory is continuing the same overtime workweek as before. However, it will be some time before prompt deliveries can be made on any but orders for just one or two nozzles for emergency needs.

MONARCH MFG. WORKS, INC.
E. WESTMORELAND & SALMON STS., PHILADELPHIA 34, PA.

ENJOY EASY POST-WAR SALES
— WITH THE —
TEESDALE T.U.X. PUMP

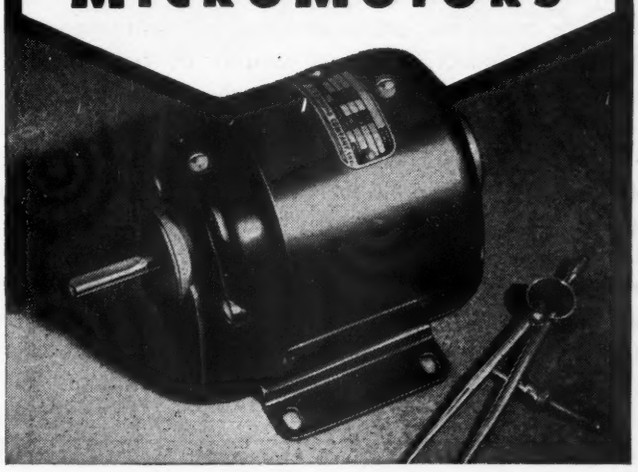
IT'S FULLY AUTOMATIC
ALL PARTS INTERCHANGEABLE
The Heart Beat of the Burner's Oil Flow

TEESDALE MANUFACTURING CO.
427 MARKET AVENUE
GRAND RAPIDS 3, MICHIGAN

"CUSTOMER ENGINEERING SERVICE"

Assures Proper Application of

Redmond MICROMOTORS



REDMOND small motor specialists, with years of experience and complete equipment, have the ability to thoroughly analyze and solve difficult application problems. They will advise you exactly how to use Micromotors for obtaining fine performance and long life with trouble-free operation.

The Redmond Type "T" totally enclosed A.C. Micromotor, illustrated above, is built in sizes up to 1/25th horsepower. It is readily adaptable to heating, ventilating and air-conditioning applications.

Redmond COMPANY, INC.

OWOSSO, MICHIGAN

Composite view of Redmond facilities

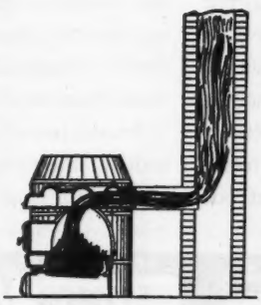
REDMOND

AC and DC MICROMOTORS • DYNAMOTORS • SPEED CONTROLLERS • BLOWERS

"Required Reading"

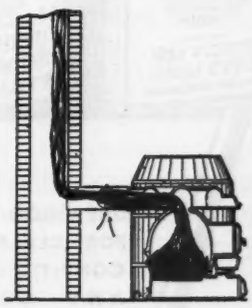
FOR EVERY MAN INTERESTED IN HEATING EQUIPMENT PERFORMANCE:

Why Install a Draft Control?



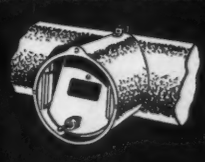
The diagram at left illustrates what takes place in the average heating plant not equipped with a FIELD DRAFT CONTROL. When the chimney draft is greater than necessary for proper draft and combustion, heat is drawn up through the chimney and wasted. Fuel wastes run as high as 25%!

At the right we picture for you the change effected when a FIELD DRAFT CONTROL is installed. The barometric pressure opens the gate, maintaining the proper draft to carry smoke up the chimney, but withdrawing excess draft through the opening created by pressure of the air upon the gate.



SAVE FUEL WITH A FIELD DRAFT CONTROL | BUY U. S. WAR BONDS

field



CONTROL DIVISION

of H. D. Conkey & Company — Mendota, Illinois

FOR FAST VENTING OF STEAM JOBS USE

GORTON *Equalizing Valves for Radiators and Gorton Air Eliminators For Mains*

Gorton Valves are the quickest venting valves made with various sizes of air outlets properly designed for automatic heating.

SEND FOR LITERATURE AND PRICES

GORTON HEATING CORP., Cranford, New Jersey

Since 1887 Manufacturers of Heating Equipment

have less carrying capacity than pre-war tires and on this basis old tire carrying capacity charts are obsolete. I suggest you consult your truck and tire suppliers on this point.

It is evident to me there are other developments coming along which might increase the coefficient of friction between the vehicle and the highway to such an extent that winter operations of the future may be greatly improved. Statistics I have read indicate that inner tubes made of synthetic rubber will be brought out which will be a definite improvement over the natural rubber tubes. The benefit to operators will be a lighter weight product for a given size tube which will be capable of holding air for a longer period of time and thus will contribute directly toward the maintenance problem because nothing, in my opinion, has tended to break down casings and shorten the life of them more than improper inflation.

I have had the opportunity to preview some of the new models that will be coming on the market. It is evident to me some manufacturers are far ahead of others as far as cab ventilation, heating and seat comfort are concerned. It behooves those who expect to obtain the most for their operators to study carefully these individual features. In the past but little consideration has been given to motor truck cabs, heating, ventilation and seating arrangement; however, it is apparent to me that the average fueloil delivery operator will encounter greater comfort in the future than has been the case in the past.

Still the choice of leading boiler manufacturers and heating men after 20 years' nationwide service.

For sale by all wholesalers of plumbing and heating supplies. *Ask For Folder "K."*

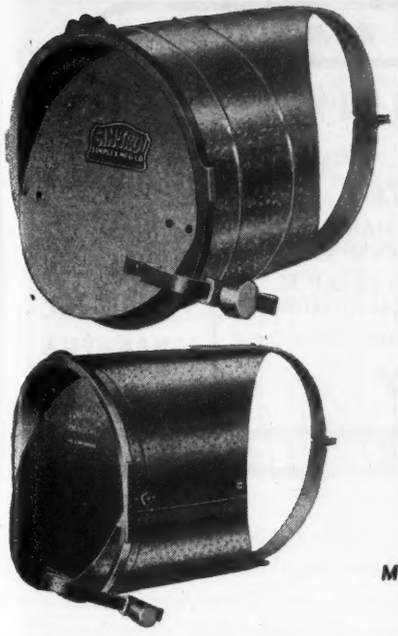
THE VINCO CO., Inc.

305 E. 45 Street, New York 17, N. Y.

DISTRICT SALES MANAGERS

WANTED

We have openings for several high grade men to serve as District Sales Managers on Atlantic Coast and in Middle West. Successful applicants must be between 30 and 40 years old, aggressive, ambitious, have a good working knowledge of heating and be experienced in dealer's sales work or sales promotion. Top pay. Excellent chance for advancement in a steady, rapidly expanding organization if you can accept responsibility, are free to travel, and have the knack of working with dealers. In answering, give full details, age, experience, background, and state when you will be available. Write T. A. Crawford, General Sales Manager, Timken Silent Automatic Division, The Timken-Detroit Axle Company, 100 Clark Avenue, Detroit 32, Michigan.



IF BETTER DRAFT CONTROLS ARE EVER MADE THEY WILL STILL BE MADE BY

"SIMPLEX"

"Type H" Fuel Saver

Made in all sizes from 4" to 24" inclusive.
The frames of type "H" controls from 5" to 10" inclusive, are made of a new alloy, cast in our special molds, and the gates are made of galvanneal or black iron, cadmium plated.
All balancing members are cadmium plated, making practically a rust proof control.

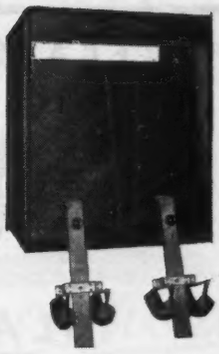
5 in 1 SIM-TROL

with Simplex Adjustable Sleeve

adjustable to breechings from 8" to 12" inclusive, which covers the range of most domestic heating plants.

Type "D"

Made for Oil and Gas Water Heaters, Stoves and Space Heaters.



Type "A" Industrial Control made for any size plant.

All Simplex Controls have *outside* balance members. With this system no soot or carbon can gather to throw the gate out of balance.

Made by **SIMPLEX Manufacturing Co.**
FOND DU LAC, WIS.

Atomic Heat No Threat

(*Continued from page 40*)

energy source is a very small target.

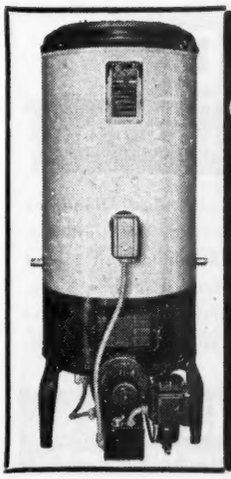
Some years ago Einstein arrived at the conclusion mathematically that energy and matter were the same. His formula was simple that $E = mc^2$, where m is the mass and c is the velocity of light. That means that a pound of anything totally converted to energy would create 38.9 trillion Btu, or 15.3 billion horsepower, or 11.4 billion kilowatt hours. As revealed in the "Smyth Report" this formula has been proved to be correct.

This is the energy that holds the atom together. To totally destroy a pound of any material would require 15.3 billion horsepower, but if it were possible to capture the energy released when this pound of matter is disintegrated by atomic means, we would gain 15.3 billion horsepower of energy. Since most atoms are relatively stable, it is not likely in the foreseeable future that we shall find ways to break down our more common elements atomically to capture this energy.

The heaviest elements such as radium and uranium have large unstable atoms from which neutrons are constantly being thrown off. These elements are said to be radio-active, since these flying neutrons penetrate other matter. Radiation from radium will pass entirely through most matter and affect a photographic plate to give us X-ray pictures, but if the human body is long exposed to these radiations, some of the atoms that make up the body will be hit and damaged with serious results.

Atom-smashing before the news blackout on wartime development, was mostly carried out in cyclotrons suggestive of Buck Rogers and the 25th century. It was found, however, that a neutron could be shot against another atomic nucleus, and knock several of its neutrons out of it. This transformation of a heavy atom into two or more atoms of less weight and mass released energy equal to the loss of weight, according to Einstein's formula. It was considered possible that a series of such reactions could be started with each neutron bullet creating several other neutron bullets, which in turn would make new hits and release further energy, until a violent explosion would occur. History has proved the professors were right.

The miracle of the atomic bomb is in the unbelievable amount of work that was done to manufacture and purify enough highly radio-active material to make the bomb possible. Natural uranium is mostly (99.3%) composed of



Bock OIL BURNING WATER HEATERS

INTERMITTENT OPERATION
ELECTRIC IGNITION
WITH BOTH VAPORIZING AND PRESSURE TYPE BURNERS
Available in Six Sizes
WRITE OR WIRE TODAY FOR COMPLETE INFORMATION
BOCK CORPORATION
MADISON WISCONSIN

Manufacturers of Rexoil Conversion Burners, Boiler Units, Furnace Units and Direct-Fired Conditioners

REXOIL

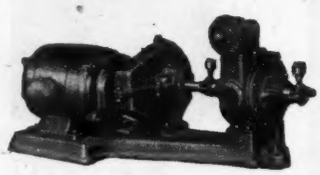
REIF-REXOIL, Inc.
35 Carroll St. Buffalo, N. Y.

ORDER NOW

Rexoil Burners are being shipped as fast as possible . . . but the backlog is growing, so order soon, Remember, you're RIGHT with REXOIL . . . over 60,000 in use.

A PUMP YOU CAN TRUST FOR HANDLING

BECAUSE BLACKMER "BUCKET DESIGN"
MEANS *SELF-ADJUSTMENT FOR WEAR . . .*
ECONOMY YOU NEVER EXPECTED



BULK STATION PUMPS	TRUCK PUMPS	HAND PUMPS
50 to 750 G.P.M. Single or twin	35-50-90 G.P.M. Double bearings	1½ to 25 G.P.M. Barrel or tank

Write for Bulletin No. 102—Pumps for the Petroleum Industry.

GASOLINE
CRUDE OIL
BUTANE
FUEL OIL
LUBE OIL
NAPHTHA

BLACKMER PUMP COMPANY
2170 CENTURY AVENUE GRAND RAPIDS 9, MICHIGAN

SERVING THE PETROLEUM INDUSTRY FOR OVER 40 YEARS

atoms with 92 protons and 146 neutrons (U-238), and only 0.7% composed of atoms containing 92 protons and 143 neutrons (U-235). Only the U-235 atom is capable of the sustained violent neutron "chain" reaction that would cause an explosion. But each pound of U-235 comes scattered through 140 pounds of relatively inactive U-238. The problem was to separate the U-235, but since it is a different form of the same element, it could not be separated chemically.

The work that was done resulted in the creation of a new element called Plutonium, which will sustain the chain reaction. By bombarding the U-238 atom with "slow" neutrons from U-235, the neutron was made to join the U-238 atom to make a new atom with 92 protons and 147 neutrons (U-239), which in turn converts itself into an atom with 94 protons and 145 neutrons (Pu 239). This new element is highly radio-active and will explode when a mass of it in the right size and shape is brought together.

It was necessary in the manufacturing process to slow down the neutron radiation so that the flying neutrons would join the atoms they encountered, rather than pass by them at high speed. It will be remembered that the nucleus of an atom is a very small target, and hard to hit. By slowing the speed of the neutrons, it was found that more and gentler hits could be made with the greater production of the desired Plutonium. Rods of uranium were embedded in large blocks of pure carbon. The passage of

GUARDIAN FLEXIBLE COUPLINGS

For OIL BURNERS

Sleeve end of coupling is close sliding fit on blower wheel hub. Power is transmitted through four spline ribs of coupling fitting four spline grooves in blower wheel hub.

This exclusive direct drive coupling, with rubberized cushion gripped permanently, has no parts to get out of order, or to lubricate. Minimizes misalignment, free-end float, and backlash. Custom-made for specific job. Immediate attention. More than 300,000 tested and proved in oil burners during the last five years.

Regular Guardian Coupling

Manufacturers, Jobbers or Dealers—

GUARDIAN UTILITIES CO.
218 E. Michigan St., Michigan City, Ind.

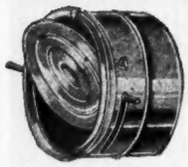
WRITE or WIRE

FOR SAFETY SAKE

Protect the boiler water line with

NEWARK CONTROLS
Bloomfield N. J.

PREFERRED
DRAFT-A-JUSTOR

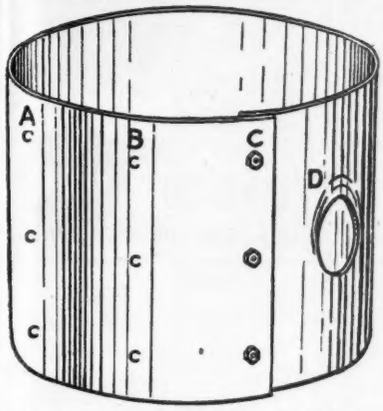


Write for literature and trade price

The Original. Still the Best. Hundreds of Thousands in Use. • Holds the draft constant in the fire box. • Scientific draft control for the smallest to the largest jobs. • Stove, domestic, and commercial sizes from 4" to 24" in diameter. • Industrial sizes from 24" x 24" to 5' x 12'.

PREFERRED UTILITIES Mfg. Corp.
1860 Broadway, New York 23, N. Y. Boston Office: 839 Beacon St.

ONE-PIECE
Stainless Steel



Made in U.S.A. Pat. No. 2,341,622

PEMCO
3-in-1
Fire Boxes

$9.00 ea. F.O.B. NEW HAVEN

Suggested resale price $12.00.

This one chamber adjustable from 1:00 G.P.H. to 2:25 G.P.H.

FOR REPLACEMENTS CONVERSIONS NEW INSTALLATIONS

Pemco 3-in-1 Combustion Chambers meet every dealer's requirements:

- Excellent profit.
- No need to carry three sizes of fire boxes in stock or to the job.
- Installed easily and quickly in any domestic burner or furnace. No need to remove present fire box.
- Enormously improved furnace performance makes customers enthusiastic.

Limited quantity available. Order immediately. Satisfaction guaranteed. For more information, send for technical bulletin.

Distributors' Inquiries Invited.

ABC EXCHANGE
224 Bassett St.
New Haven 11, Conn.

the neutrons through the carbon slowed their speed the desired amount, but the transformation of the atomic structure was accompanied by tremendous heat generation. It is by the use of these carbon "piles" that the most immediate peacetime use of atomic energy may be possible. However, there are many unsolved problems to be licked before a carbon-uranium pile in the basement will heat the house.

The normal concentration of U-235 in uranium is so small that extremely large piles are required to maintain the reaction. By increasing the U-235 concentration by physical or electrical means, it might be possible to decrease the size of the piles, but the cost of concentrating uranium is a possible economic barrier, at least for the immediate future.

The piles at Hanford, Wash., were cooled by pumping great quantities of water from the Columbia River through them. The engineers had to be careful not to raise the temperature of the river enough to affect industry and the fish downstream. But there are more serious problems.

Everything in the pile, once it is put in operation, becomes highly radio-active and contact with any part of it would be deadly. The pile is shielded by thick concrete walls, and all operations such as removing the uranimu-plutonium rods for plutonium recovery has to be done by remote control. The water that is pumped through the pile has to be held until it loses its radio-activity before it is dumped back into the river. Special piping has to carry the water into the pile, since exposure to neutron bombardment would disintegrate many materials.

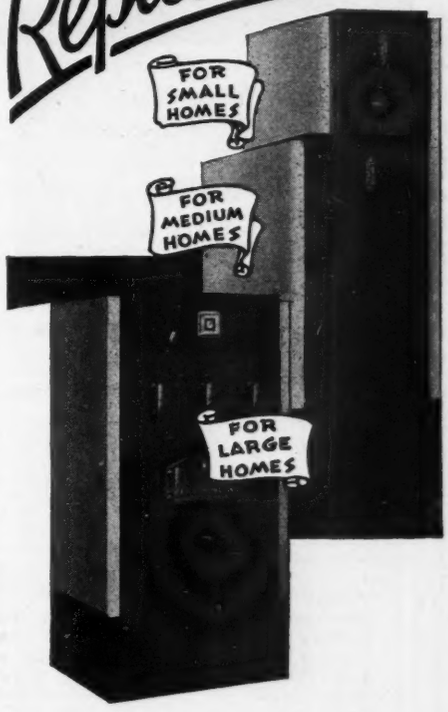
Plutonium which is manufactured in the uranium has to be removed periodically, since the accumulation "poisons" the reaction and slows it down. At present the rods have to be removed, dissolved, the plutonium separated and the uranium recovered—all by remote control. Obviously no homeowner could be allowed to service his own atomic boiler, or even go near it unless it were thoroughly shielded. "Shaking the grates" to remove plutonium would expose him to deadly radio-activity, and any great concentration of plutonium might be damaging to the county.

Uranium is not commercially avail-

H.B. Smith

CAST-IRON BOILERS AVAILABLE FOR

Replacement



This year, as last year, H. B. SMITH is concentrating on the production of cast-iron boilers for replacement and other essential purposes. A *complete* line of boilers for all purposes and for all fuels is still available. Capacities 200 to 25,000 sq. ft. of steam radiation.

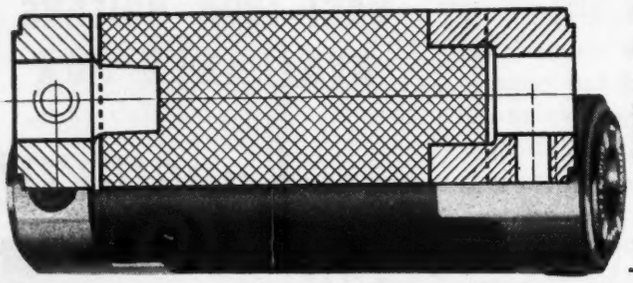
To SMITH customers whom we have served during these difficult times, we wish to extend a sincere assurance that again this year our manufacturing facilities will be devoted to the production of those boilers which you so vitally need and which are so essential to the maintenance of adequate health standards on the home front.

The H. B. SMITH CO., Inc.
WESTFIELD, MASS.

SMITH
Since 1853
MOST FAMOUS NAME IN HEATING

L-R FLEXIBLE COUPLINGS

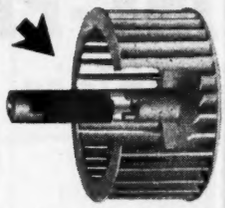
You'll have Hurry-up Calls for
OIL BURNER RECONDITIONING
That means L-R Couplings for *silent* correction of misalignment —takeup of shock and vibration.



Immediate Delivery
Any Quantity from Stock

Types and sizes to meet any and all requirements. Type "UX" Double-flex shown. Wire or write for details and prices.

Mfrs. of blower wheels furnish wheels with L-R Jaws.



Jaws integral with hub.

LOVEJOY FLEXIBLE COUPLING CO.
5012 W. Lake St. Chicago 44, Ill.

able, since the United States Government is contracting for all possible supplies. If it should be released for general use there are no figures available on the cost of U-235 in various concentrations.

When the U-235 atom splits it loses only 0.001 of its mass. The "products of combustion" weigh 0.999. Since the energy released is equal only to the loss in mass, the energy released by reaction in a pound of U-235 will be 0.001 of the theoretical maximum, or 38.9 billion Btu, 15.3 million horsepower, or 11.4 million kilowatt hours. That is equal to the heat content of 278,000 gallons of 140,000-Btu heating oil. On this basis 7-cent heating oil would be equivalent to U-235 at $19,460 a pound. If it were possible to use it, four ounces of U-235, costing at the rate calculated $4,865, would heat the average 2,200 gallon home for 30 years.

Pure U-235, if it ever becomes commercially available, probably will be extremely costly. Probably higher than normal concentrations (1 part in 140) in U-238 can be made commercially at considerably lower cost, and make possible the construction of an atomic boiler or water heater of reasonable commercial size. The other problems of radio-activity, corrosion, cleaning and maintenance still remain to be solved before atomic boilers become available to the home-owner.

More immediate in value to the industry of the country than the release of nuclear energy, is the advance in engi-

Asphalt Paint
Aluminum Powder
Bronzing Liquid
Boiler Treatment
Boiler Stop-Leak
Boiler Solder
Boiler Putty
Cutting Oil
Fuel-Oil Tank Cleaner
Furnace Cement
Lime Solvent
Parts Cleaner
Oil-Line Cement
Pipe Joint Compound
Retort Cement
High Temp. Casting Cement
Soot Destroyer
Special Products

CHEMICALS OF QUALITY
At Production Prices!
DIRECT FROM MANUFACTURER
either under the established "Chem-Alpha" trade-mark or your own labels, printed specially for you at no extra cost. Any quantity—large or small.

OUR NEW CATALOGUE & PRICE SHEET AVAILABLE ON REQUEST.

CHEM-ALPHA, INC.
MARLBORO, N. J.
New York Office:
545 - 5th AVE., NEW YORK 17, N. Y.

ATTRACTIVE PROPOSITION AVAILABLE TO MANUFACTURERS' REPRESENTATIVES, SALES AGENTS & JOBBERS.

WATCH FOR Gillen's announcement of their new improved line of Automatic Water Heaters and Furnaces

GILLEN
Automatic
FURNACES and WATER HEATERS
J. L. GILLEN & Co.
DOWAGIAC MICHIGAN

OIL SOOT E-Z DESTROYER

WAR ON WASTE!

Increase efficiency of oil by keeping heating unit free from excess soot. All oil soot in fire chamber and flues vanishes instantly when sprayed with E-Z Fuel Oil Soot Destroyer.

"EASY TO USE— ECONOMICAL TOO!"

DISTRIBUTORS: *Write for fine proposition.*

HEALY-RUFF COMPANY, 797 Hampden Ave., St. Paul, Minn.
Enclosed find check ( ) money order ( ) Send the following prepaid:

No. 1 pkg.....$1.00
No. 5 pkg..... 4.50

Name .....
Address .....
City..... State.....

HAYWARD OIL BURNERS

ROTARY and PRESSURE ATOMIZING TYPES

Dealer and Distributor Inquiries Invited.

HAYWARD MFG. CO., INC.
505 COURT STREET BROOKLYN 31, N. Y.

PARAGON
OIL BURNERS
NONE BETTER
LEADER in New York City Sales
Write for Details Paragon Oil Burner Corp. Bridgewater St. at Newtown Creek, B'klyn 22, N. Y.
Your Favorite TO WIN in the POST WAR CLASSIC

neering that has been made in the last four years of work on the atomic bomb project. More than 5,000 new products and procedures have been developed which await only governmental release to become available to industry. There are new and improved pumps, leakproof seals, a multitude of new testing and control instruments, and new instruments and methods of corrosion detection. These by-products are considered to be of more immediate importance to industry than the release of atomic energy.

The fact remains, however, that man has opened a new era with the first release of power from the nucleus of the atom. He has his foot in the door, though it may take hundreds of years for him to get the door wide open. The start has been made. In the meantime, there is no indication that industry, and the domestic heating industry in particular, needs to start immediately to plan on utilization of atomic energy.

◈

PAW Outlines Procedure for Getting Tankers

PAW HAS RECOMMENDED steps to be taken by members of the petroleum industry who may desire tanker transportation for petroleum products from the Gulf to the East Coast or between East Coast ports. These are the recommended steps:

1. Companies which have not already done so should submit to PAW a statement of tanker requirements for the three months beginning October 1, 1945. PAW will relay these requirements to War Shipping Administration with its recommendations.

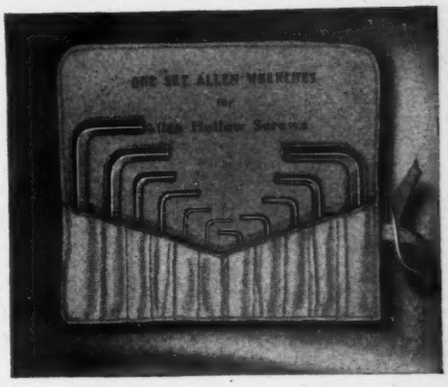
2. Those companies owning tankers which are now operating under charter to War Shipping Administration should arrange with WSA to fit these tankers into their requirement schedule on a continuous voyage basis.

3. Companies which do not own or have available sufficient tanker tonnage to meet their requirements should request WSA to assign tonnage. Companies having surplus tonnage should also advise WSA.

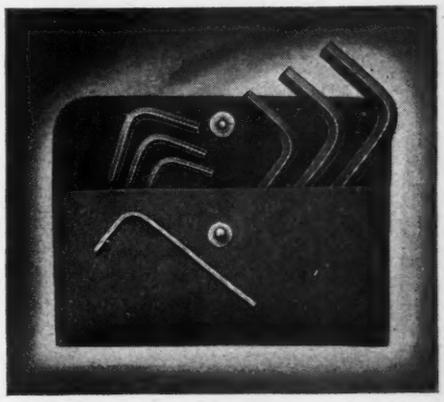
4. Address John J. Winterbottom, Director of Tanker Allocations, War Shipping Administration, Commerce Bldg., Washington.

ALLEN
Key Kits

Key Assortments to fit Hex-Socket Screws in the range of sizes the oil-burner serviceman needs everyday.

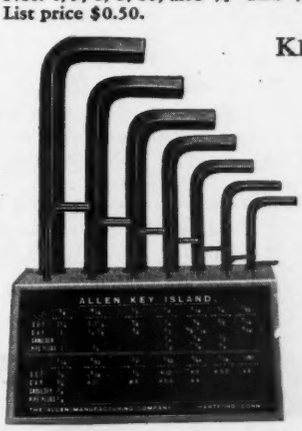


KEY SET No. 603: This canvas partitioned bag contains 11 short arm hexagonal keys which fit all screws from and including No. 10 up to and including 1¼" diameter set screws. List price $1.75.



JUNIOR KEY KIT No. 604: Seven short-arm Allen Keys are included in this strong leatherette envelope. They fit the hex holes of sizes Nos. 8, 10, ¼", 5/16", 3/8", 7/16" and ½" set screws and Nos. 4, 5, 6, 8, 10, also ¼" and 5/16" cap screws. List price $0.50.

KEY ISLAND



This handy key set contains 14 keys fitting all sizes of set screws up to and including 1¼"; cap screws up to 1"; shoulder screws to 1" and pipe plugs to 1". Container is plainly labeled to show the correct size key to use with each screw. No. 615; list price $2.35.

Ask for complete listings of Allen Hollow Screw Assortments and Key Kits. Address inquiries and orders to Dep't. M,

THE ALLEN MFG. CO.,
HARTFORD 1, CONN., U. S. A.

Fire Box

FUELOIL & OIL HEAT CLASSIFIED ADVERTISING

{Insertions are payable in advance. The rate is 75 cents per line, with a minimum charge of $4.50 for six lines or less.}

Save Fuel—Save Money. Barclay has complete stock fuel-saving devices—furnace regulator sets, temperature controls, draft regulators, insulating materials, filters, oil burner pumps. Write for our catalog of all installation accessories and replacement parts for oil burners and stokers. Robert Barclay, Inc., 130 N. Peoria St., Chicago, Ill.

FUEL OIL PRICE CHART complete with celluloid holder. Made for use by drivers or office personnel. Stop figuring over and over again. When ordering advise us retail fuel oil price in your town. Chart shows from 1 to 999 gallons and the amount in dollars and cents you should charge your customer. Price $1.00. Degree Day Systems, 5104—39th Ave., Woodside, N. Y.

OILBURNER MANUFACTURER will buy any quantity of parts . . . Motors, Pumps, Transformers, Controls, etc. Selectrol Engineering Company, 2036 McDonald Ave., Brooklyn, N. Y. ES 5-5100.

PROFITABLE DEALERSHIP FOR SALE. Well established oil burner business handling one make burner for 19 years. Leading dealer in city of 125,000 population in eastern Penna. Reason for selling, because of health, unable to handle properly the greatly increased activity of present market. Address Box No. 527, c/o FUELOIL & OIL HEAT, 232 Madison Ave., New York 16, N. Y.

SALES REPRESENTATIVE with 20 years experience desires to represent manufacturers of burners, boilers, furnaces and accessories in Bergen and Passaic Counties, New Jersey. Address Box 528, c/o FUELOIL & OIL HEAT, 232 Madison Ave., New York 16, N. Y.

MANUFACTURERS REPRESENTATIVE: 15 years selling automatic and oil heating equipment to wholesale and trade outlets, will consider a few desirable products for the plumbing and heating jobbers, and builders. Many lucrative buyers on my list. Eastern Penna., Southern New Jersey and Delaware Territories. Commission basis. Address Box 525, c/o FUELOIL & OIL HEAT, 232 Madison Ave., New York 16, N. Y.

MECHANICAL DRAFTSMAN. Experience in industrial oil and gas piping desirable, but not required. General boiler room and knowledge of heating and power plants essential. Good salary, permanent, post-war opportunity. Mid-West Heat Service, 3336 W. Franklin Blvd., Chicago, Ill. Van Buren 3900.

WANTED: Water Softener Salesman to contact distributors. Line includes Oil Burners, Water Heaters and similar products. A chance to increase your income through your softener contacts. Salary & Commission to applicants having good contacts. Write Box 526, c/o FUELOIL & OIL HEAT, 232 Madison Ave., New York 16, N. Y.

WANTED: Experienced Sales Engineer for commercial and industrial oil burners by large, long established Phila. concern; attractive income. Address Box 529, c/o FUELOIL & OIL HEAT, 232 Madison Ave., New York 16, N. Y.

Advertisers' Index

Airtemp Division of Chrysler Corporation 24
Allen Manufacturing Company, Inc. 65
Allen Mfg. Co., The 111
American Radiator & Standard Sanitary Corporation 22
Atlantic Refining Company, The . 21
Autocar Co., The 19
Automatic Burner Control Exchange 109

Bacharach Industrial Instrument Co. 98
Bell & Gossett Co. 52
Bettendorf Oil Burner Company . 70
Blackmer Pump Company 108
Bock Corporation 107
Bowser, Inc. 99
Brodie Co., Inc., Ralph N. Inside Front Cover
Bryant Heater Company 68, 69
Burnham Boiler Corporation 83

Century Engineering Corp. 89
Chem-Alpha, Inc. 110
Cleveland Steel Products Corp. ("Toridheet") 16
Cole-Sullivan Engineering Company 100
Combustion Control Corp. 95
Combustion Utilities Corporation 92
Cyclotherm Corporation 12

Delavan Engineering Co. 98
Delco Appliance 13
Detroit Lubricator Company ... 49
Dielectric Products Co., Inc. 112
Dole Valve Company 77
Dongan Electric Mfg. Co. 90

Eddington Metal Specialty Co. .. 58

Field Control Division H. D. Conkey & Co. 105
Fitzgibbons Boiler Company, Inc. 15
Ford Motor Company 60

Gar Wood Industries Inc., Heating Division 18
General Controls 102
General Electric Company 85
General Fittings Company Inside Back Cover
Gilbert & Barker Mfg. Company 23
Gillen & Co., J. L. 110
Goodall Rubber Company, Inc. . 82
Gorton Heating Corp. 106
Guardian Utilities Co. 108

Harvey, Inc., Sid 51
Harvey-Whipple, Inc. 56, 57
Hayward Mfg. Co., Inc. 110
Healy-Ruff Company 110
Heil Co., The 27
Henry Furnace Company, The .. 28
Herco Oil Burner Corporation .. 62

Jefferson Electric Company 73
Johnson Co., S. T. 66

Kewanee Boiler Corporation 20
Klemm Automotive Products Company 29
Kraissl Company, The 76
Kresky Manufacturing Company. 8

Lau Blower Company, The 9
Liquidometer Corp., The 76
Little Burner Co., H. C. 6
Lovejoy Flexible Coupling Co. .. 110

Mack Trucks, Inc. 87
Maid-O-Mist, Inc. 100
May Oil Burner Div., Gerotor May Corp. 14
McDonnell & Miller 61
Mel-Gauge Company 103
Mercoid Corporation, The 71
Minneapolis-Honeywell Regulator Co. .....Back Cover
Monarch Mfg. Works, Inc. 104
Morrison Steel Products, Inc. .. 59
Mueller Furnace Co., L. J. 17

National Radiator Co., The 63
New York Air Valve Corporation 101
Newark Controls 108

Olsen Manufacturing Co., The C. A. 72

Paragon Oil Burner Corp. 111
Penn Boiler and Burner Manufacturing Corp. 78, 79
Perfection Stove Co., Inc. 55
Perfex Corporation 32
Petroleum Heat & Power Corporation 91
Petroleum Solvents Corp. 86
Philadelphia Valve Company .. 97
Preferred Utilities Mfg. Corp. ... 108

Rayfield Co., C. L. 102
Redmond Company, Inc. 105
Refractory & Insulation Corp. .. 67
Reif-Rexoil, Inc. 107
Rochester Manufacturing Co., Inc. 101
Ruud Manufacturing Co. 93

Scully Signal Company 75
Shell Oil Company 80
Silent Glow Oil Burner Corporation, The 53
Simplex Manufacturing Co. 107
Skuttle Mfg. Co. 54
Smith Co., Inc., The, H. B. .. 109
Smith Meter Company 96
Socony-Vacuum Oil Co., Inc. .. 74
Sundstrand Machine Tool Co., Pump Division 3

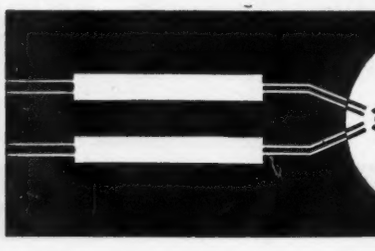
Taco Heaters, Inc. 25
Teesdale Manufacturing Co. 104
Thrush & Company, H. A. 88
Timken Silent Automatic Division, The Timken-Detroit Axle Company 30
Torrington Manufacturing Company, Inc. 26
Triplex Heating Specialty Co. .. 81
Tuthill Pump Company 84

Vinco Co., Inc., The 106

Wayne Oil Burner Co. 98
Webster Electric Company 64
Whitehead Metal Products Co. .. 93
White-Rodgers Electric Co. 7
Williams Oil-O-Matic Div., Eureka Vacuum Cleaner Co. .. 4

"X" Laboratories, Inc. 31

Yale & Towne Manufacturing Company, The 94



IGNITION ELECTRODES IN QUANTITY—TO MEET THE INDUSTRY'S EXACTING NEEDS

DIELECTRIC PRODUCTS CO., INC.

125 VIRGINIA AVENUE, JERSEY CITY 5, NEW JERSEY

OIL BURNER IGNITION ELECTRODES, INSULATORS, CABLES, BUS BARS AND ASSEMBLIES